

THE APPLE II MAGAZINE

FREE LISTING!

Help Your Kids
Learn to Spell
Page 68

incider

A CWC/I PUBLICATION

USA \$2.95
Canada \$3.95
1986

TAKE IT WITH YOU!

A TRULY
PORTABLE //C

EXTRA MEMORY:
WHO NEEDS IT?

CREATE A GRADEBOOK
WITH APPLEWORKS

PIRACY IN THE CLASSROOM—
WHO'S THE LOSER?



JIM MUNRO
and his //C
in Hong Kong

REVIEWS:
BusinessCard
Fantavision
Fontworks
Diamond

0 www.Apple2Gnline.com
D.R. Kenneth Buchholz



74470 12066

(No I.D. required for half-elves.)

When the Going Gets Tough, the Bard Goes Drinking.

And the going is tough in Skara Brae town. The evil wizard Mangar has cast an eternal winter spell. Monsters control the streets and dungeons beneath. Good citizens fear for their lives. What's worse, there's only one tavern left that serves wine.

But the Bard knows no fear. With his trusty harp and a few rowdy minstrel songs he claims



are magic, the Bard is ready to boogie. All he needs is a band of loyal followers: a light-fingered rogue to find secret doors, a couple of fighters to bash heads, a conjurer to create weird allies, a magician for magic armor.

Then it's off to combat, as soon as the Bard finishes one more verse.

Now what's a word that rhymes with "dead ogre"?



4 classes of magic user, including wizard and sorceror. 85 new magic spells in all.

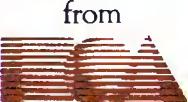


128 color monsters, many animated. All challenging.



Full-color scrolling dungeons. 16 levels, each better than the one before. 3-D city, too.

The Bard's Tale™



ELECTRONIC ARTS™

Optional use of
characters created
in Wizardry® or
Ultima III.®

Specs: 100% machine language, 400K worth on 2 disks. 64K RAM minimum; enhanced for 128K. Now available for Apple II family for \$44.95, C-64 & 128 for \$39.95. **To order:** Visit your retailer or call (800) 227-6703 (In Calif. call (800) 632-7979) for VISA or MasterCard orders. To purchase by mail, send check or money order to Electronic Arts, P.O. Box 306, Half Moon Bay, CA 94109. Add \$3 for insured shipping and handling. Allow 1-4 weeks for delivery. The Bard's Tale is worth the wait.

Apple is a trademark of Apple Computer. Wizardry is a registered trademark of Sir-Tech Software, Inc. Ultima is a registered trademark of Richard Garriott. The Bard's Tale and Electronic Arts are trademarks of Electronic Arts. For a copy of our complete catalogue and direct order form, send \$.50 and a stamped, self-addressed envelope to Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403.

Fleet System 3TM

Integrated Word Processing, Spell Checking and Thesaurus

**Super Value
\$79.95!**

John and Mary Customer
3 Fleet Lane
Productivity, USA

Dear John and Mary,

INTEGRATION is defined as "The act of bringing all parts together to make a better whole." Fleet System 3 has been carefully designed to bring you the most essential writing tools - Word Processing, Spell Checking and Thesaurus, all in one extremely powerful, wonderfully EASY TO USE integrated system.

Fleet System 3 provides you with every important word processing feature including Preview so "what you see is what you get," built-in Mail Merge for personalized letters, built-in Math Functions and much, much more.

In addition, Fleet System 3's integrated 90,000 Word Dictionary ensures that embarrassing misspellings are a thing of the past and gives your work a crisp, professional appearance. What's more, Fleet System 3's integrated Thesaurus provides you with tens of thousands of synonyms and helps students, writers, and business people to improve their reading, writing and vocabulary skills immediately!

Invest in the best . . . Fleet System 3. The ultimate, integrated writing tool.

Sincerely,

The Staff of PSI

- #1 greatest, best, supreme, maximum
- #2 final, definitive, conclusive, end
- #3 peak, utmost, apex, extreme

- **Powerful, Easy To Use Word Processing**

Helps you type, insert, delete and rearrange text. Perfect for book reports, term papers or full office use.

- **90,000 Word Dictionary**

Eliminates embarrassing misspellings, and can spell check a 10 page document in approximately 1 minute!

- **Integrated Thesaurus**

Provides thousands of synonyms and antonyms and helps improve your reading, writing and vocabulary skills immediately.

Includes every important word processing feature, including Mail Merge and an Extra Text area—(a second 80 column screen) that works like a scratch pad for storing and merging information. Invest in the best. Fleet System 3 . . . the VALUE PACKED integrated writing system. Required Hardware: Apple IIe or IIc with 128K • Disk Drive • Suitably interfaced printer.



**CALL 1-800-343-4074 for the Dealer nearest you!
Over a quarter of a million programs in use worldwide since 1980**
PSI, 51 Fremont Street, Needham, MA 02194 (617) 444-5224

SuperCalc3a

SENSIBLE SPELLER™

Mouse Desk™

DOLLARS™
AND SENSE™

*Managing
Your Money...*

pfs: plan

AppleWorks™

MouseWrite™

pfs: graph

Why The Biggest Names In Soft AST's SprintDisk™ Memory

AST and leading software manufacturers are working together to break new ground, establish new standards and provide new solutions that enhance the power of your Apple II for your serious business and educational needs.

In making their hardware compatibility choices — choices that can make or break their companies — the

software leaders look to AST, the hardware leader with the proven track record. So should you.

AST is the world's leading supplier of enhancement products for personal computers with a well-earned reputation for outstanding quality and reliability. We offer a full-line of products for the Apple II and Macintosh™ families. And you've heard of our award-winning SixPakPlus® multi-function card for the IBM PC — the defacto industry standard with well over 500,000 shipped.

**Introducing SprintDisk:
Up To 2 MB Of Memory
Expansion And All The
Software Compatibility,
With None Of The
Modifications.**

The new generation memory card is here, now you can break the 64K barrier with all the software compatibility you need. Designed for use as a rapid-access, mass-storage device, SprintDisk provides up to 2 Megabytes of desktop workspace for your spreadsheets, word processing documents and databases.

Good-bye Software Patches.

With SprintDisk you can take advantage of expanded memory while saying "good-bye" to the hassles of modi-

*The most current versions

SprintDisk, SprintCache trademarks and SixPakPlus registered trademark of AST Research, Inc. Apple registered trademark and Apple II, Macintosh, AppleWriter II, AppleWorks and ProDOS trademarks of Apple Computer, Inc. BusinessWorks is a trademark of Manzanita Software Systems. MouseWrite is a trademark of Roger Wagner Publishing, Inc. Dollars and Sense is a trademark of Monogram. BPI and BPI Systems are trademarks of BPI Systems, Inc. Sensible Speller is a trademark of Sensible Software, Inc. Mouse Calc and Mouse Desk are trademarks of Version Soft. SuperCalc 3a is a registered trademark of Sorcim/IUS Micro Software. A Division of Computer Associates International, Inc. PFS: Write, PFS: Plan, PFS: Report, PFS: File and PFS: Graph are registered trademarks of Software Publishing Corporation. Quark is a trademark of Quark Incorporated. ReportWorks registered trademark of Megahouse Corporation. Pinpoint is a trademark of Pinpoint Publishing and Virtual Combinations, Inc. Managing Your Money registered trademark of Micro Education Corporation of America.

Copyright © 1986 AST Research, Inc. All rights reserved.



Apple Writer II™

BusinessWorks™

CATALYST™

Mouse Calc™

pfs:™
file

Reportworks™

pfs:
report

Pinpoint™

pfs:
write

BPI
GENERAL
ACCOUNTING

ware Are 100% Compatible With Expansion For The Apple II.™

fications. All your favorite applications software* (those illustrated above and more) are completely, automatically and immediately compatible. Of course, SprintDisk is ProDOS™ DOS 3.3 and Pascal 1.3 compatible.

The Speed of AST's

SprintCache™ Buffer. We include exclusive utility software — we call it SprintCache — so if you are using multiple storage devices, you can also use SprintDisk as a caching buffer. It allows you to cache up to fourteen floppy, hard-disk or tape drives for higher performance and greater productivity.

Hardware Facts. SprintDisk is compatible with the Apple II Memory



Expansion board. It's fully socketed and user-upgradeable with 256 Kb chips. And it comes with its own RAM diagnostic software.

The Quality, Service and Support of an Industry Leader. AST's worldwide reputation is built on quality. SprintDisk features the highest-quality four-layer construction and undergoes extensive testing and comprehensive burn-in procedures for the ultimate in reliability — AST has the lowest product failure rate in the industry. And don't forget our two-year warranty, world-renowned service and customer support.

For more information call (714) 476-3866 or circle the reader service below.

Circle 222 on Reader Service Card.

FEATURES

SprintDisk

- Up to 2 MB Total Memory
 - 256 Kb to 1.0 MB on mainboard
 - Up to 1.0 MB additional memory on piggyback card
- Apple II Memory Expansion board compatible
- SprintCache for fast, user-transparent disk/tape caching
- ProDOS, DOS 3.3 and Pascal 1.3 compatible
- No application software modifications necessary
- Fits any I/O slot except #3 in II, II+ or IIE
- Fully socketed and user-upgradeable

AST
RESEARCH INC.



DON'T BUY A HARD DISK DRIVE, OR ANOTHER BOARD...



...until we expose you to
The New Kache Plus Card
next month!



Ohio Kache Systems Corp.
Dayton, Ohio

Ohio Kache Systems is a developer of
computer enhancement products.

Publisher Terri Hamilton
Editor in Chief Deborah de Peyster
Managing Editor Dan Muse
Technical Editor Paul Statt
Senior Editor Eileen T. Terrill
Review Editor Eric Grevstad
Assistant Editor Lafe Low
Proofreader Peter Bjornsen
West Coast Editor Wendy Lea McKibbin
(415) 328-3470
Field Editor Babs Cringely

Advertising

Sales Manager/Northeast Paul Boule
Sales Representative (800) 441-4403
(603) 924-7138
Southeast and Central Dale Strang
Sales Manager (800) 441-4403
Sales Manager/Northwest Donna Pomponi
1060 Marsh Road
Menlo Park, CA 94025
(415) 328-3470
(800) 344-4636 in CA
Sales Manager/Southwest Sanford L. Fibish
1060 Marsh Road
Menlo Park, CA 94025
(415) 328-3470
(800) 344-4636 in CA
Sales Representative Fiona Davies
Advertising Coordinator Kim Labbe
(800) 441-4403
Marketing Services Manager Dawn F. Matthews

Design

Art Director Donna Wohlfarth
Production Supervisor Phyllis Pittet
Ad/Graphics Production Rosemary Gibson

Graphic Services

Graphic Services Manager Dennis Christensen
Manufacturing Manager Susan Gross
Typesetting Supervisor Linda P. Canale
Typesetter Nancy Salwen

Special Products

Special-Products Director Jeff DeTray
Special-Products Manager Craig Pierce

CW Communications/Peterborough

President/CEO James S. Povec
Vice President/Finance Roger Murphy
Assistant General Manager Matt Smith
V.P. of Planning and Circulation William P. Howard
Circulation Manager Frank S. Smith
Direct & Newsstand Raino Wirein
Sales Manager (800) 343-0728
Direct-Marketing Manager Bonnie Welsh
Single-Copy Sales Manager Linda Ruth
Director of Credit, Sales, and Collection William M. Boyer
Audits and Statistics Manager Susan Hanshaw
Executive Creative Director Christine Destrempe
Founder Wayne Green

*inCider's BBS (bulletin-board system)
On line 24 hours: (603) 924-9801*

*inCider (ISSN #0740-0101) is published monthly by CW Communications/Peterborough, Inc., 80 Pine Street, Peterborough, NH 03458. Phone: (603) 924-9471. Second-class postage paid at Peterborough, NH, and additional mailing offices. (Canadian second class mail registration number 9590.) Subscription rates in U.S. are \$24.97 for one year, \$38.00 for two years and \$53.00 for three years. In Canada and Mexico, \$27.97—one year only, U.S. funds drawn on a U.S. bank. Nationally distributed by International Circulation Distributors. Foreign subscriptions (surface mail), \$44.97—one year only, U.S. funds drawn on a U.S. bank. Foreign subscriptions (air mail), please inquire. **Postmaster:** Send address changes to inCider, Subscription Services, P.O. Box 911, Farmingdale, NY 11737. (Send Canadian changes of address to: inCider, P.O. Box 1051, Fort Erie, Ontario L2A 5N8.)*

*Photo & illustration credits: Cover, page 38 (bottom)
Ray Cranbourne; pages 38-39 (top) 40, 43, Robert B. Smith; pages 46, 47 Phil Geraci; pages 49, 54, 55, 112 Frank Cordelle; page 56 Katherine Mahoney; page 63 Roger Goode.*

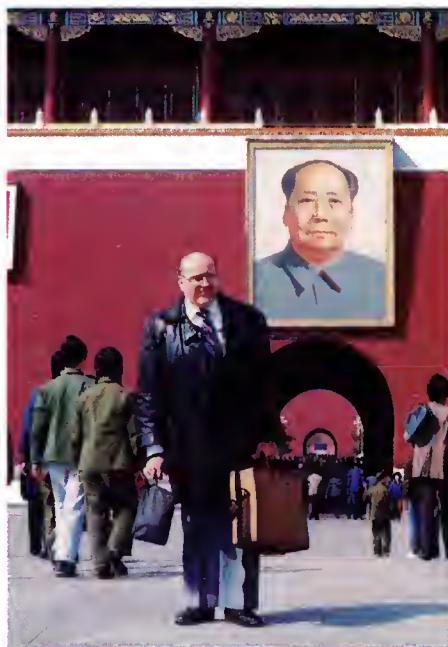
inCider

ON THE COVER

38 The //c—From Here to Hong Kong

by James B. Munro

If you've ever dreamed of making your Apple //c truly portable, you'll find the reality of Jim Munro's self-styled portable //c inspiring.



38

46 Two Roads to Memory Expansion

by Paul Statt

The type of software you choose helps determine the type of memory-expansion card you need. inCider looks at the differences between auxiliary-slot and peripheral-slot boards and how those differences affect you.

54 Four Leading Choices

by Bill O'Brien

Here's a look at four top contenders in the memory-expansion-board market.

56 What's Going Wrong in Classroom Software?

by inCider staff

When a teacher illegally copies educational software, is it piracy or is it justified? Whatever you call it, software vendors are hesitating to develop better educational software because of it.

63 Making the Grade with AppleWorks

by James G. Troutman

An AppleWorks gradebook will let you spend less time computing grades and more time planning lessons and working with students.

68 Spell It Out

by Tom Addicks

This free program will help your children learn to spell and memorize words.

TUTORIALS

AppleWorks in Action

Working with a Customer Data Base

by Ruth K. Witkin

Applesoft Adviser

Scrambler

by Dan Bishop

Right of Assembly

Machine-Language Addressing Modes

by Roger Wagner

38

DEPARTMENTS

inCider's View

User-Group Culture Goes On Line
by Deborah de Peyster

Letters

News Line

Future II's; Lasers and Lawyers; Closed for Good?; Apple Eyes CD-ROM; Flash: Another Franklin; Better Mind Tools; Calendar

Apple Clinic

To Enhance or Not to Enhance?; Enhancement Too Expensive; More Apple //c Numeric Keypad; Wrong Keyboard ROM; Magic Window Patch; Apple II Plus Obsolete?; AppleWorks for All; AppleWorks and UniDisk 3.5; Random Routines; //c Testing; Happy Memories by Jim Sather and Paul Statt

Reviews

BusinessCard; Fantavision; Battle of Antietam; FontWorks 1.2; Diamond; Quick-20 and Challenger; Fixit

Stattus Report

Knowledge
by Paul Statt

Game Room

Nam; Panzer Grenadier; Battle Group
by Brian J. Murphy

New Products

Hints/Techniques

Computed GOTO's; GET Enhancement; Improving TIME; ProDOS Portal; Transfer; 80-Column Listing

Coming Attractions

Reader Services

Editors' Choice

MacroWorks: The Icing on AppleWorks' Cake



User-Group Culture Goes On Line



by Deborah de Peyster

"If Apple supplied all the answers, user groups would have no rumors, gossip, or information to pass on. And some of the fun would be gone."

More than 300 Apple users from locations around the world were there. Apple Computer executives, sharing spaghetti in a home in Portola Valley, California, were there, too. They had all gathered on line for the first question-and-answer conference of its kind. And as MAUG systems operator Neil Shapiro exclaimed in type that crawled across the screen, the event was a tribute to "good old user-group culture."

But, I thought as I eavesdropped on the electronic conversation, what is "user-group" culture? Perhaps by reviewing the on-line event itself, the details would emerge.

It appears that a basic premise of user groups is the interaction of "them" and "us." "Them" is the manufacturer, and "us" is the dedicated user who spends time and money trying to figure out how to make what we bought more useful. In this particular case, "us" was members of MAUG (Microcomputer-networked Apple User Group) asking questions, and "them" was Apple, sort of answering. For example:

"Us": When will the new II be released, and how will it be different from the //c and //e?

"Them": How do I put this nicely? I can't discuss it—you'll cuss. Save some money, though. . . . Let me just say we'll make Apple II users happy, whenever and however.

"Us": Does Apple plan to enter the color-computer business in the way Atari and Commodore have recently?

"Them": No!!! I like my job, so we'll do it right!

"Us": We hear rumors about an MS-DOS coprocessor board for the //e. Any comment on that?

"Them": I've always liked coprocessor boards since my early Apple days, when I got my initiation to PIP with a SoftCard.

Other, more technical responses were more direct, such as Apple's Pete McDonald's offer to answer specific questions about a ROM fix for the bug in Apple's 3½-inch drive. (Reach him through E-mail ac-

count #76703,3030 if you're having a problem with that.) Apple also said it will definitely begin selling an Apple II networking solution based on AppleTalk by the end of the year.

But Apple's lack of direct answers to some questions was okay. It appears to be part of the culture. I guess if Apple told everybody everything all of the time, user groups would cease to exist. Part of the fun and camaraderie of a user group seems to come from the effort required to get information. If Apple supplied all the answers, user groups would have no rumors, gossip, or information to pass on. And some of the fun would be gone.

A good user-group culture also appears to thrive on a diverse mix of people. During the more than three-hour on-line conversation, MAUG members from Israel, Canada, Peru, and the People's Republic of Berkeley, California (it is a different world out there), were represented. Names such as The Kahn on //c, Squid Kid, Wink-FM 97 (who was gagged early on for being obnoxious), and Captain Video (who was reprimanded for "ungagging" people) were also heard. (Gag means to block the user's ability to write messages on screen.)

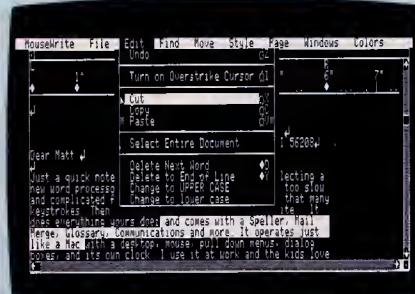
David Winer, developer of the ThinkTank outline processor, made a few on-line comments, especially once he learned that about 300 people were watching their screens. "Everyone go out and buy Think-Tank," he wrote. And Steven Jobs, cofounder of Apple and former chairman, logged on with a brief comment: "Good night, JLGee. . . . see you in the marketplace in '87." (He was addressing Apple's vice president of product development, Jean-Louis Gassée, and Apple's plans for a more powerful Macintosh. Jobs and his new company, Next, plan to build a competitive machine.)

Yes, I guess it was a good example of user-group culture. After all, information was exchanged amid jokes and a good deal of bantering. Side conversations occurred between users who discovered they knew each other. Connections were made. And one of the most important connections was reaffirmed as Apple wrote, "We're listening." ■

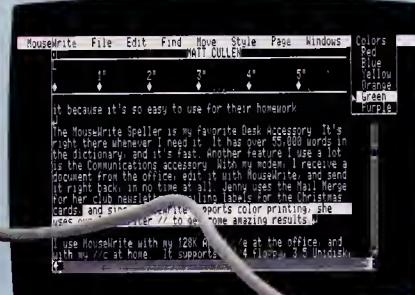
There Are a Lot of Great Reasons to Own MouseWrite...

Reasons like being able to quickly correct any mistakes with MouseWrite Speller. It's built-in so it's there whenever you need it. Want form letters, labels, or 1000 individually addressed envelopes? MouseWrite's Mail Merge and Glossary get the job done for you.

"Cut, Copy, Paste & Undo with Mac-like pull down menus"



"Make a splash by adding color with ImageWriter II and others"



MouseWrite will also load AppleWorks documents directly, or even your old DOS 3.3 Text files. It works with your 5-1/4" disk, Unidisk 3.5, hard disk, or Extended RAM card.

Suggested Retail Price: \$149.95

Ask your local dealer, or get all the details in the fact-filled MouseWrite brochure by calling:

800-421-6526 IN CA 619-562-3670

MouseWrite requires an Apple //c or 128k Enhanced Apple //e / Apple, Appleworks, ImageWriter are trademarks of Apple.

Put pizzazz in your printouts by selecting anything from Color to Custom Fonts. Save time with Print While You Work. Get in touch with the world with MouseWrite Communications. 12 more great reasons are the 12 documents you can open at once on the Expanded Desktop.

"Add style to your writing with downloadable Custom Fonts"



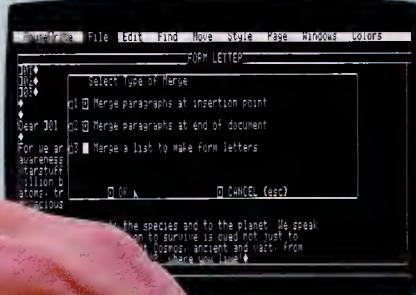
"Send and receive files with built-in Communications"



"Correct errors fast with the integrated MouseWrite Speller"



"Form letters in a flash with Mail Merge"



RWPI Customers: Special Update Prices are available on many RWPI products. If you're not registered, please write now with your name and product owned to receive complete update instructions.

Roger Wagner
PUBLISHING, INC.

More on Cataloger

I received a disk from a reader in California who couldn't get my ProDOS Cataloger (May 1986, p. 112) to work properly. Upon examining her disk, I found a problem in the program that shows up if the volume names contain 15 characters. As none of my volume names is that long, I had never encountered this problem.

The following line changes will let the program handle longer volume names:

```
560 PRINT PR$;" ";FMAX;"FILES";
:HTAB(27): PRINT "SUBDIRECTORY"
1570 N$ = LEFT$(N$,16) :HTAB 15:
PRINT N$
2220 P = 39 - LEN (MF$(F)):IF P > 0
THEN MF$(F) = MF$(F) +
LEFT$(SP$,P)
```

Ed Verdelotti
216 Missimer Lane
Vinton, VA 24179

Spreadsheet Bugs

My AppleWorks v1.3 seems to have a bug in the spreadsheet function @COUNT. This function is supposed to give you the number of nonblank entries in a list of cells. It works when the cells are adjacent and can be specified as a range, such as @COUNT(A1...A4). When the cells are listed, though, as in @COUNT(A1,A2,A3,A4), the number returned is the number of cells, blank or not. The same is true of the @AVG function, which seems to be a combination of @SUM divided by @COUNT.

I've gotten around this problem in the spreadsheets I use for grading (I'm a high-school math teacher) by keeping the cells adjacent. I've had to sacrifice some of the logical order of my data, though, to do so. It seems unlikely that a program as popular and as "old" as AppleWorks would have a bug of this nature. Am I misreading the way these functions are supposed to work?

Howard Jackson
127 Southern Boulevard
Albany, NY 12209

You're reading the @COUNT function wrongly, as we read it. @COUNT

(list) counts the number of nonblank entries in a list. This function counts entries in a range of cells—say, (A1...A6)—because if you bothered to type in @COUNT(A1,A2,A3,A4) you would have already counted the number of entries.

AppleWorks doesn't average numbers by combining @SUM and @COUNT.

Your point about the @AVG function is well taken, though. AppleWorks assumes that blank cells contain zeros in a calculation such as @AVG(A1,A2,A3). If A1 has a value of 90 and A2 and A3 are blank, the @AVG(A1,A2,A3) function returns an average of 30—although you'd expect an average of 90. Every student knows the difference between a zero on a test and no score, but AppleWorks doesn't.

We recommend you look at James G. Troutman's AppleWorks gradebook spreadsheet in this issue (p. 63) and see how he solved the problem.

—eds.

Hard-Earned

Your review of the Franklin Ace 2200 (March 1986, p. 38) was excellent. In addressing the primary concern of software limitations, *inCider* "hit the nail on the head" once again.

As owners of the Franklin 1000 series, software availability continues to be the number-one problem for us. It's further aggravated by the fact that programs that boot and run on one machine may not work on another because of ROM differences. Money saved on initial purchase price is actually "hard-earned."

One must take into account the time and effort expended searching for information and programs to get the basic machine utilization owners of other systems take for granted.

While the Franklin Computer Corporation was undergoing Chapter 11 reorganization, technical support and service/repair weren't the best because of the comparatively limited number of 1000-series machines sold, changes in management, staff cutbacks, and other problems. A potential 2000 buyer should consider that Franklin's troubled financial history may repeat itself.

Also, it appears the Ace 1000/1200

line has been formally abandoned with the introduction of the 2000. The F-DOS operating system, reportedly a vast improvement over earlier Franklin DOS versions, doesn't seem to be available as an upgrade for the 1000 line.

A potential buyer should determine Franklin's long-term upgrade and product add-on plans for the 2000 series before putting his or her cash on the barrelhead. Will the 2000 series be similarly abandoned as improved lines are introduced?

These two factors are close seconds to the main problem of software availability/compatibility the review points out, but your readers should benefit from being aware of them.

Gerald Pilak
Franklin Information Xchange
of Southeastern Wisconsin
2823 South Herman Street
Milwaukee, WI 53207

Keeping Orders

I've been trying to use an Apple IIe for a growing mail-order business for more than two years. So far, I've been limping along with slow business programs I've modified for my needs. Specifically, I need three linkable data bases (mailing list, inventory, and accounts receivable), custom input screens and/or programs (order entry, quotation generation, and purchase-order entry), customized outputs (collection notices, customer orders, purchase orders, mailing-list labels, inventory reports, and quotations), and appropriate file-maintenance utilities.

Since our Apple is used by non-computer-whiz employees, I don't want the typical complicated spreadsheet or data-base programs. Versaform XL is the only program I've found that's designed to do what I want. (I can program it myself, even with my modest skills.) Unfortunately, Versaform XL doesn't run on Apple computers. Have I overlooked any similar program that will run on an Apple, or do I have to dump the Apple and buy an IBM?

Donald A. Peterson
Cedar & Mulberry, RR #2
Gays Mills, WI 54631

Interlude II

A BED OF ROSES—INTERLUDE #136

Why did you bring me so many roses?

It was Interlude's idea.

Oh?

Imagine lying in a bed of roses...

Sounds a bit thorny.

Just the petals, darling...cool, velvety, fragrant.

Oh. Ooooooh.

Interlude II. The long-awaited sequel to the first adult computer game in history is finally here. It's provocative and playful! Outrageous and romantic! It has all the excitement of the original Interlude, plus significant new features.

The computerized interview, which is taken by one or both players, has been greatly expanded. It probes your innermost desires to discern your mood of the moment, your secret longings, your special fantasies, and then suggests for your pleasure one of its more than 160 Interludes. You can ask the computer for an Interlude for now, or one for later.

Special options give each player added control over surprises and special erotica hidden in the Interludes.

Six years ago the original Interlude took the computer world by storm, creating a media sensation:

FORUM Magazine: "The Interludes are imaginatively and sensitively written—the computer's recommendations are uncannily appropriate."

US Magazine: "The most edifying third party to join couples between the sheets since *The Joy of Sex*"

Chicago Tribune: "This marriage of computer technology and sex is natural...erases forever the image of computer-users as dull guys with slide rules in their pockets and square roots on their minds."

Money Magazine: "Sometimes it's easier to tell a computer what you want than it is to tell your partner"

Interlude II will take you to the outer limits of fantasy and romance. And, if the computer selects Interlude #99 your love life may never again be the same.

Interlude II. Are you ready for it?

Circle 253 on Reader Service Card.

Recreational Technology, Inc., 11011 Richmond, Suite 600, Houston, TX 77042

Name _____ Age _____

Address _____

City/State/Zip _____

Accepted for payment:

MasterCard® Acct. # _____ Exp. Date _____

VISA® Acct. # _____ Exp. Date _____

Charge customers must sign here: _____

1-800-752-7001 ext. 829
(in Texas call 1-800-442-4799 ext. 829)

\$39.95 Interlude II

Shipping \$3.00 (outside U.S.A.
\$10.00)

TX residents add 6 1/4% sales
tax (\$2.45)

\$ _____ TOTAL INC

Available for Apple II, II+, IIc and IIe.
†Trademarks of Apple Computer, Inc.

We recommend you check out some of the better high-powered accounting packages for the Apple II before falling prey to MS-DOS. Try Manzanita's *BusinessWorks*, BPI's *Business Accounting*, or Peachtree's *Back to Basics*. On the other hand, if you're feeling especially creative and have a man-month or more to kill, you could create a custom program with AppleWorks, but it would be slow.

—eds.

No Renewal

I've been using a program called Tax Manager for the past few years and have found it complete and quite easy to use. In previous years, I've received a renewal notice from Micro Lab and just sent in a check and my old disk to get each update. This year, though, when I didn't hear from the company at the usual time, I mailed a check with a letter requesting the renewal.

I haven't heard from the company or received my check back. I've sent follow-up letters to the address printed on Micro Lab's previous correspondence and in a 1986 software catalog. The Postal Service hasn't returned my letters, either.

The address I used is Micro Lab, 2310 Skokie Valley Road, Highland Park, IL 60035. Any help you could offer would be greatly appreciated.

Joseph F. Keady, Jr.
15415 Sylvan Glen Drive
Dumfries, VA 22026

Our information is a bit limited, too. We have an address for Micro Lab listed as 2699 Skokie Valley Road, Highland Park, IL 60035. The company's telephone number, (312) 433-7550, has been disconnected. Micro Fun, producer of the game Miner 2049er, is listed at the same address.

—eds.

Born Again

What an interesting editorial in your April issue ("Apple Sees the Light," p. 6), using religious terminology and metaphor to get across a point about Apple computers.

Regarding the first paragraph, I'd like to mention that the term "born again" has its origins in the New Testament Gospel of John. The term is used not so much to indicate a return to faith as a coming to faith for the first time. Jesus indicates that being

born physically is only the first birth, and a spiritual birth is necessary for anyone to enter heaven. This isn't a spiritual rebirth.

Anyway, it's an interesting article. If I may suggest my own interpretation of what has been transpiring at Apple, I would call it a reformation—a return to a previous interpretation of basic doctrine.

I enjoy *inCider* very much and look forward to my copy each month.

Jim Proud
6754 South Lakeview Street
Littleton, CO 80120

I'd like to comment on Deborah de Peyster's editorial in the April 1986 issue. I consider myself a born-again Christian, but not at all as described in this article.

The term "born again" comes from the Bible—specifically, the book of John, chapter 3. In verse 3, Jesus says you must be born again to see the kingdom of God. In verses 6 and 8, Jesus explains that being born again means being born in the spirit. It isn't simply a matter of "returning to faith with renewed vigor," as the editorial indicates. To become a citizen of God's kingdom, I must be born twice—once physically and once spiritually. The spiritual birth is what Jesus called being born again.

Bud Lengtat
15157 Magnolia Road
Grass Valley, CA 95949

Mad as Heck

I enjoy *inCider* and look forward to receiving it every month in the mail. It's informative, stimulating, and very practical. I have only one complaint—Writing Software International's use of profanity in its advertisement.

Most of the ads you publish aren't offensive to any of your readers. Why allow one that could be? Please be more selective.

Thank you for a great magazine. I hope you'll maintain the high quality I've seen in both articles and ads until the last couple of months.

Bud Lengtat
15157 Magnolia Road
Grass Valley, CA 95949

WSI recently changed its ad copy to eliminate any offensive terminology; please see p. 75 in the July 1986 issue.

—eds.

Indexing

I'm interested in obtaining an index of *inCider* magazine articles. Can you help me with this?

Robert Barrett
920 Mark Avenue
Hamilton, OH 45013

In every January issue, we publish an index to the preceding 12 issues. You can also find a comprehensive index to the magazine on the *inCider* BBS. To reach the BBS, use your modem to call (603) 924-9801. —eds.

Kudos

I'd like to express my appreciation for *inCider*'s tutorial AppleWorks in Action, by Ruth Witkin. It's refreshing to find an article that a hopeless non-techie like myself can follow and implement. I went through a tough weekend a month or so ago trying to get my own mailing list going. If I'd had this article I could have done it in the morning and easily made my Saturday afternoon tee-off instead of missing it. Thanks for realizing there are some neophytes among your readers—and some perpetual neophytes, who love it when a piece is written in words they understand.

Jerry Dublin
3020 Canyon Valley
Plano, TX 75075

inCider welcomes readers' comments regarding articles, letters, or other topics of interest. We reserve the right to edit letters for clarity, style, and space. Please address your correspondence to Letters, *inCider*, Elm Street, Peterborough, NH 03458.

CORRECTIONS

The price of Andrew Tobias' *Managing Your Money* (MECA) is incorrect as quoted in our April 1986 issue (p. 49). The correct price is \$199.95.

The phone number for Synergetic Communications is incorrect as printed in our June issue (p. 53). The correct phone number is (415) 548-8170.

APPLE HARD DISK UPGRADES. ONE SIZE FITS ALL.



FULLY COMPATIBLE WITH APPLE® MACINTOSH™ 128 AND 512, MACINTOSH PLUS, IIe™ AND IIc™.

Finding a reliable and affordable hard disk for your Apple computer is easier than you think thanks to the new ProAPP® 10 and 20 megabyte hard disk systems.

10MB HARD DISK SYSTEM—\$795.

20MB HARD DISK SYSTEM—\$995.

Attractively styled and priced to match, the compact ProAPP 10 and 20 are designed to work with all popular Apples. Everything you need is provided: cables, easy-to-use manuals and software. Simply plug in and run.

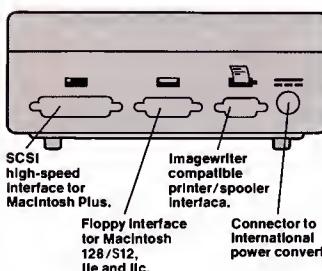
The ProApp 10 and 20 come ready to support the following Apples and operating systems: Macintosh 128 and 512, Macintosh Plus; IIc and IIe using ProDOS™, DOS 3.3 or Pascal 1.3.

BUY DIRECT AND SAVE.

Right now, you can purchase the ProAPP 10 and 20 direct. This not only gives you the lowest possible price, but allows for faster, more responsive support.

ONE YEAR LIMITED WARRANTY.

The ProAPP 10 and 20 are rugged, reliable hard disk systems, incorporating the latest engineering advances like our SCSI interface and print spooler. That's why we can back them with a full 12-month limited warranty. And a toll-free hotline to answer any installation and operating questions you might have.



It's also reassuring to know that the ProApp 10 and 20 are designed and manufactured by some of the same team of experienced professionals who helped the industry leaders perfect their hard disk systems.

MONEY-BACK GUARANTEE.

Each ProApp 10 and 20 hard disk comes with a "no risk" money-back guarantee. Order the ProAPP and use it for up to 10 days. If you're not 100% satisfied with its performance, return it for a complete refund.

ORDER TODAY. CALL 800-424-2425.

To order your ProAPP 10 or 20, or for additional information, call toll-free. Use the coupon below and charge it to your VISA, MasterCard or American Express card, or send money order and get next week, UPS surface delivery. Allow approximately 30 days for personal checks to clear.

PROAPP™

10005 Muirlands, Suite 0
Irvine, CA 92718

Apple is a registered trademark, MAC and Macintosh are licensed trademarks, and ProDOS, Pascal 1.3, IIe and IIc are trademarks of Apple Computer, Inc. ProAPP is a trademark of ProAPP, Inc. All disk capacities are listed as formatted. © 1986 ProAPP, Inc.

Yes! Rush me the ProAPP hard disk system specified below, including all cables, manuals and software.

ProAPP 10MB Hard Disk(s) at \$795 each (includes shipping, handling and sales tax).

ProAPP 20MB Hard Disk(s) at \$995 each (includes shipping, handling and sales tax).

To receive correct cable kit, please specify your machine:

I have a MAC Plus MAC 128/512 IIe IIc

Name _____ Company _____

Shipping Address _____

City/State/Zip _____

Phone (____) _____

I've enclosed my check or money order for \$ _____

Please bill the following credit card account for \$ _____

VISA MasterCard American Express

Card Exp. Date _____

Card # _____

Signature _____

Mail to: ProAPP, Inc., 10005 Muirlands, Suite 0, Irvine, CA 92718

RamWorks II®

The Best Selling, Most Compatible, Most Recommended, Most Expandable Card Available.



64K to 16 MEG! RamWorks II Is Number One.

It's simple, RamWorks II sells the most because it does the most.

The AppleWorks Amplifier.

While RamWorks II is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks II does. Naturally, you'd expect RamWorks II to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K, and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks II does. With a 256K or larger RamWorks II, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

Only RamWorks II eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 15,000. Only RamWorks II increases the number of lines permitted in the word processing mode from 2,250 to over 15,000. And *only* RamWorks II (256K or larger) offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. Ram-

Works II even expands the clipboard. And auto segments large files so they can be saved on two or more disks.

RamWorks II, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks II couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, HowardSoft, FlashCalc, The Spread Sheet, Managing Your Money, SuperCalc 3a, and MagiCalc to name a few (and *all* hardware add on's like ProFile and Sider hard disks). RamWorks II is even compatible with software written for Apple cards. But unlike other cards, RamWorks II plugs into the IIe auxiliary slot providing our super sharp 80 column text in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

Highest Memory Expansion.

Applied Engineering has always offered the largest memory for the IIe and RamWorks II continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 meg is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks II has the widest selection of expander cards available. Additional 512K, 2 MEG, or 16 MEG cards just snap directly onto RamWorks II by plugging into the

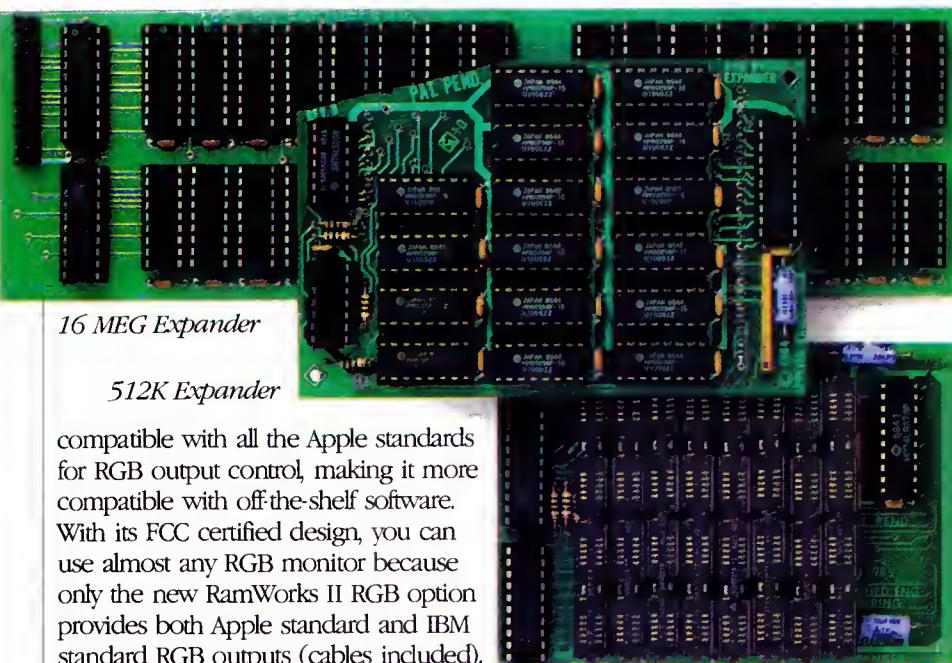
industry's only low profile (no slot 1 interference) fully decoded memory expansion connector. You can also choose non-volatile, power independent expanders allowing permanent storage for over 20 years.

It Even Corrects Mistakes.

If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks II, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks II to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks II and with good reason. Some others combine RGB output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks II RGB option offers better color graphics plus a more readable 80 column text (that blows away any composite color monitor). For only \$129 it can be added to RamWorks II, giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks II RGB option is more than just the ultimate in color output because unlike others, it's fully



16 MEG Expander

512K Expander

compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks II RGB option provides both Apple standard and IBM standard RGB outputs (cables included). The RGB option plugs into the back of RamWorks II with no slot 1 interference (works on the original RamWorks, too) and remember you can order the RGB option with your RamWorks II or add it on at a later date.

True 65C816 16 Bit Power.

RamWorks II has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 meg of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 yet maintains full 8 bit compatibility.

Endorsed by the Experts.

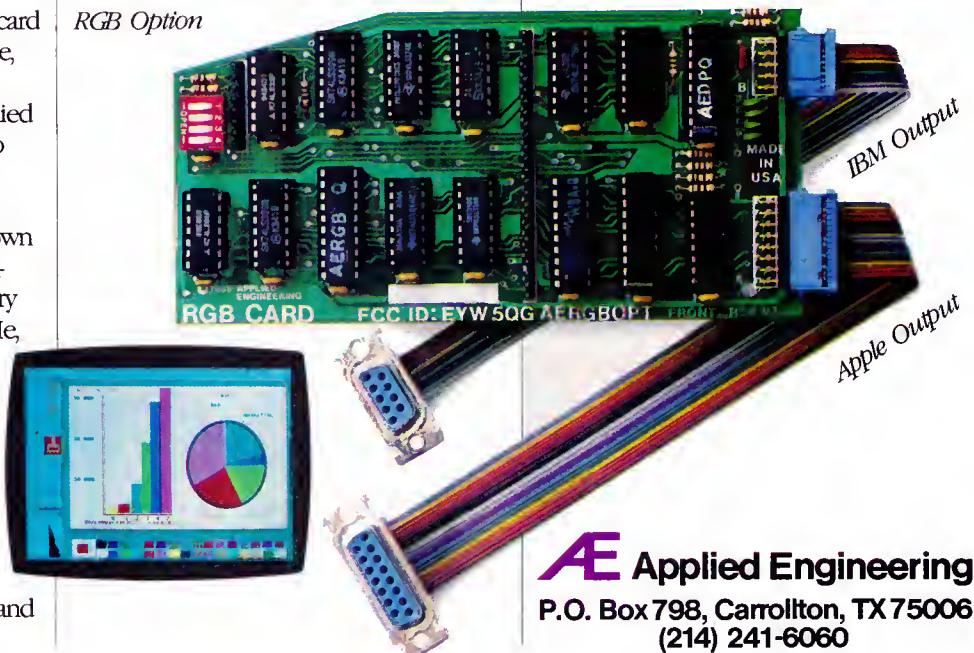
Steve Wozniak, creator of the Apple Computer said "I wanted a memory card for my Apple that was fast, easy to use, and very compatible, so I bought RamWorks." A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks II is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars...For my money, Applied Engineering's RamWorks II is king of the hill."

Apple experts everywhere are impressed by RamWorks II's expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIe. With a RamWorks II in your Apple, you'll make IBM PC's and AT's look like slowpokes.

It's Got It All

- 15 day money back guarantee
- 5 year hassle free warranty insures coverage no matter where you purchase
- Built-in super sharp 80 column display, (with or without RGB)
- Expandable to 1 MEG on main card
- Expandable to 16 meg with expander card, with NO slot 1 interference
- Can use 64K or 256K RAMs
- Powerful linear addressing 16 bit coprocessor port
- Automatic AppleWorks expansion up to 3017K desktop
- Accelerates AppleWorks
- Built-in AppleWorks printer buffer
- The only large RAM card that's 100% compatible with all IIe software

RGB Option



- RamDrive™ the ultimate disk emulation software included free
- Memory is easily partitioned allowing many programs to be in memory at once
- Compatible, RGB option featuring ultra high resolution color graphics and multiple text colors, with cables for both Apple and IBM type monitors
- Built-in self diagnostics software
- Lowest power consumption (patent pending)
- Takes only one slot (auxiliary) even when fully expanded
- Software industry standard
- Advanced Computer Aided Design
- Used by Apple Computer, Steve Wozniak and virtually all software companies
- Displays date and time on the AppleWorks screen with any PRO-DOS compatible clock
- Much, much more!

RamWorks II with 64K	\$179
RamWorks II with 256K	\$219
RamWorks II with 512K	\$269
RamWorks II with 1 MEG	\$369
RamWorks II with 1.5 MEG	\$539
RamWorks II with 3 to 16 MEG	CALL
65C816 16 Bit Card	\$159
RGB Option	\$129
256K Upgrade	\$ 50

RamWorks II. The industry standard for memory expansion of the Apple IIe.

ORDER YOUR RamWorks II TODAY.

9 a.m. to 11 p.m. 7 days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5 1/8% sales tax. Add \$10.00 if outside U.S.A.

AE Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

NEWS LINE

edited by *inCider* staff

Future II's

The latest word is that the Apple //x will indeed be ready on schedule in September.

Apple software developers are thrilled after playing with the new Apple's 16-bit coprocessors, its megabyte of built-in RAM, and its custom sound and graphics chips. One developer confided that his company took all its personnel off its major Atari 1040ST project: "[The Apple] is that hot."

Publishers are preparing a whole range of software—everything from games to business programs. One widely known developer—a company that created a "blockbuster" product for the Apple //e and //—has all but finished writing an integrated package (spreadsheet, data base, and word processor) that takes advantage of the new machine's sound and graphics, as well as its 16-bit coprocessor.

Courtesy of Taurus Photos/Marty Heitner

Another company, VIP Technologies, is ready to ship VIP Professional, an integrated package emphasizing a Lotus 1-2-3-like spreadsheet. To use the current version of VIP Professional, you need an expansion board with a 16-bit option, but clearly the big push for this product will come with the Apple //x.

We're especially happy to see simulation-game makers drooling over the new II. They're raving about its enhanced graphics and the ease of writing code for a machine that can address more than 64K at a time.

The "game market," given up for dead when kids got bored with Space Invaders, may be only in its infancy. Powerful (and, let's hope, inexpensive) machines with audio/video quality approaching that of television may breathe new life into consumer publishers such as Activision, Broderbund, Electronic Arts, and Mindscape.

The business market for the new Apple II may have to wait, though. Bill Goodhew, president of Peachtree Software, reports that his company would like to put its impressive accounting packages, including a new query system that integrates all its Back to Basics modules, onto "Apple's future products." But, he warns, "we have to go with the market demand, and the Apple II market doesn't warrant" supporting the //x.

And one major publisher of financial software for the consumer market claims that programs like his that are written for the Apple Pascal operating system don't translate well to the //x, "which runs strictly ProDOS. It's difficult, but not impossible."

We still haven't heard anything about communications software for the //x. We also have no definitive word on the name of the new machine, but Cortland, Baldwin, and a number of other names of varieties of apples have been mentioned. At this writing, the price of the Apple //x is by no means fixed: We're hoping for something less than \$1000, but we're expecting something more than \$2000.

—P.S.

Lasers and Lawyers

The Laser 128, the Hong Kong //c clone with 128K, a disk drive, a keyboard with numeric keypad, and serial, parallel, and RGB ports for an amazing \$395, is here to stay. Either that, or it's an illegal import due to be smashed by a judge's gavel. Which you believe depends on whom you hear—the Laser's manufacturer Video Technology and U.S. vendor Central Point Software, or Apple Computer, which has hit Video Technology with a copyright and patent-infringement lawsuit.

The legal battle goes back to 1984 in Hong Kong, when Apple claimed the Laser 128's predecessor, the II Plus-compatible Laser 3000, was an illegal copy. When the 3000 came to America last year, so did the lawsuit. Video Technology sought a judgment from Chicago's U.S. District Court that its clone was not a copy, and Apple filed a countersuit. Now both sides have added claims regarding the 128 to their existing suits.

As of late April, the case showed no sign of a quick conclusion, or even of coming to trial. According to Dave Gish, president of Video Technology's U.S. subsidiary in Elk Grove Village, Illinois, "[The lawyers are] still in the discovery stage, with information being exchanged." Meanwhile, the 128 has passed U.S. Customs scrutiny. Gish says he's "confident in our [legal] position," and is building a network of Laser dealers.

"We do have some background and experience in making a computer compatible so it doesn't infringe," Gish points out.



"We're an up-front company; we're not trying to back-door [or copy] the computer at all, and we've been up front with Apple."

According to Marianne Lettieri, an Apple Computer spokeswoman, Apple is seeking an injunction to prevent Video Technology from distributing the 128 in the United States on the basis that it infringes on Apple's patent and copyright.

"We have closely examined the 128 and determined it to be in violation of Apple Computer's copyright and patent. Accordingly, we have amended our previous suit against Video Technology to include the 128," Lettieri says.

Apple has been unwilling to reveal its specific complaints. But according to Michael Brown, president of direct-mail distributor Central Point Software of Portland, Oregon, the charges concern two areas. One is a copyright claim on a disk called Universal DOS, licensed from a developer in California and included with the first few hundred Lasers. "When we heard it might be a problem, we just discontinued it. It wasn't a real Apple-compatible DOS anyway, though some of the commands were the same," Brown says.

The second issue concerns two video patents and one floppy-disk controller patent, Brown says: "I looked at them, and Apple's out in left field. They're just reading the broadest interpretation of the patents you can get, way beyond what the courts are holding. The video circuitry in the Laser is all standard NTSC cook-book stuff."

Meanwhile, Brown claims that interest in the lawsuit has "practically" doubled sales of the Laser 128: "We're catching up with back orders now; last week we got about 1500 [Lasers], and next week we should get 2000. By the end of June, we should be able to ship 20,000 units a month." —E.G.

Editor's note: While the legal jury is still out, inCider's verdict on the 128 will appear in next month's Reviews section.

Closed for Good?

Some Apple //c owners face an unexpected problem when they open their machines to add memory-expansion boards from Applied Engineering and Checkmate Technology. Applied's Z-RAM card and Checkmate's MultiRam CX require you to handle a screwdriver and, more importantly, to pop the memory-management unit (MMU) chip off the motherboard and install it on the memory-expansion card.

There, say disgruntled customers, is the rub. Some //c MMU's are soldered onto the motherboard, not socketed in place. The average man in the street can't remove and replace a soldered memory-management unit in less than 30 minutes. More than one novice has damaged the //c trying.

"The problem isn't super-severe," claims Dan Pote, president of Applied. He sells 60 Z-RAM's a day, and finds that "only three or four [//c's] have the soldered chips that present a problem."

Applied's latest installation instructions offer advice on telling soldered chips from socketed—it isn't hard. If you can easily remove the MMU, it's probably socketed. If it won't come off, and it looks as if there's melted metal around the edges, don't force it—it's soldered. If you're the unlucky owner of a soldered Apple //c, don't despair: Applied Engineering can install the Z-RAM card for you.

Kin Seto, Apple's Third-Party Hardware Evangelist, was adamant: "It is not Apple's policy to solder any chips on the logic board. What happened is that the //c was not designed to be an open system, and our manufacturers in Singapore found that soldering the MMU was a cost-effective measure [and quality control was easier]. My impression is that it was a mistake [to solder the MMU]. We have taken input from our third-party developers, Checkmate and Applied Engineering, and acted accordingly."

Andy Niemic, president of Checkmate, was impressed with "the fantastic response from Apple. We told them a few of our customers were having trouble, and they corrected the problem almost at once." He says that all Apple //s, "as far as I can tell, have socketed MMU's. If they have soldered MMU's, it's not that big a deal to add MultiRam, but you might want your dealer to do the job."

CALENDAR

July 31-August 3
EXTENDING THE HUMAN MIND: COMPUTERS IN EDUCATION
Eugene, OR
contact:
Paul Katz
Continuation Center
1553 Moss Street
Eugene, OR 97403-1942
(503) 686-3537

August 4-15
NINTH ANNUAL COMPUTER DAY CAMP
Orange, CT
contact:
Michael Zabinski
National Computer Camps
P.O. Box 585
Orange, CT 06477
(203) 795-9667

August 11-12
MICROCOMPUTERS IN VOCATIONAL EDUCATION
St. Paul, MN
contact:
Dr. Marty Rossman
Director of Special Services
Vocational/Technical Building
University of Minnesota
St. Paul, MN 55108
(612) 373-1525

Your dealer, or you if you're handy, can solve the soldering problem in either of two ways. You can remove the solder, or you can swap the logic board for one with a socketed MMU. Your dealer shouldn't charge you for the exchange.

Apple has seen the error of its ways: Rick Wright, Apple's Engineering Program Manager for the IIc, contacted his engineers in Singapore and reassured us that "as of now, all Apple IIc's will have the MMU's in sockets."

The ghost of Steve Jobs' "closed box" still haunts Apple in curious ways. But Apple seems willing to pay the price—even in increased production costs—of keeping its architecture open, helping third-party developers enhance the II, and giving your computer the power it needs. —P.S.

Apple Eyes CD-ROM

Apple is "eager to talk" to technical innovators and market powers interested in developing CD-ROM, write-once, or erasable optical products, according to Mike Liebhold, manager of optical-media applications for Apple Computer.

Liebhold, who addressed software vendors at the 1986 Software Publishers Association conference in San Francisco, was quick to point out that Apple has no formal announcement to make at this time, then reaffirmed that the company is committed to leadership in technology and more likely than not "will do something interesting."

Any product Apple would bring to market would bear "Apple's superior user interface," and have "bottom-line value," Liebhold told vendors. An Apple product would also be "well matched to the market" and



be an appropriate solution to a genuine business or educational problem.

Liebhold noted that some of the more promising applications for CD-ROM and related technologies in businesses, schools, and libraries lie in the areas of reference, communications, productivity, and training. Examples of productivity tools he cited include spreadsheets with a high core of templates, word-processing packages that incorporate a standard business reference, and business-communication tools that come with a library of bit-mapped images.

The only Apple-based CD-ROM product on the market to date is the co-processor board and drive for the IIe from MicroTrends of Schaumburg, Illinois. MicroTrends sells a 68000-based motherboard named "Jonathan" with 512K of memory, a daughterboard named "Jonathan-CD," and a Philips drive. The total cost is \$2190 for the three pieces, all of which are required to access a CD-ROM disk.

—W.L.McK.

Flash: Another Franklin

Think the Apple-compatible market is heating up? First came Franklin's sleek IIe clone, the Ace 2200 (see review, March 1986, p. 38), then Video Technology's IIc-styled Laser 128 (see above). At June's Consumer Electronics Show, Franklin announced a IIc clone of its own: the Ace 500, promised for August delivery for \$499.

The 500 resembles the 2200—a black wedge with a 90-key keyboard, including numeric keypad and function keys—but with one side-mounted disk drive and no expansion slots. On the other hand, the 65SC02-based Ace has 256K of memory, expandable to 512K and compatible with Applied Engineering's RamWorks standard.

Other features include parallel, serial, mouse/joy-stick, and second-drive ports along with composite and RGB video output. Franklin claims the 500 will be its most compatible entry yet when it comes to Apple software; besides 40- or 80-column displays, users can switch between the unenhanced and mouse-text character sets.

While it costs \$104 more than Central Point Software's mail-order Laser, Franklin's reputation for solid engineering should make the Ace 500 a strong market contender. Stay tuned for full details and a review.

—E.G.

Better Mind Tools

The next three to five years could bring some dramatic changes in the way we think about personal computers, Jean-Louis Gassée told developers and publishers at the recent 1986 Software Publishers Association conference in San Francisco.

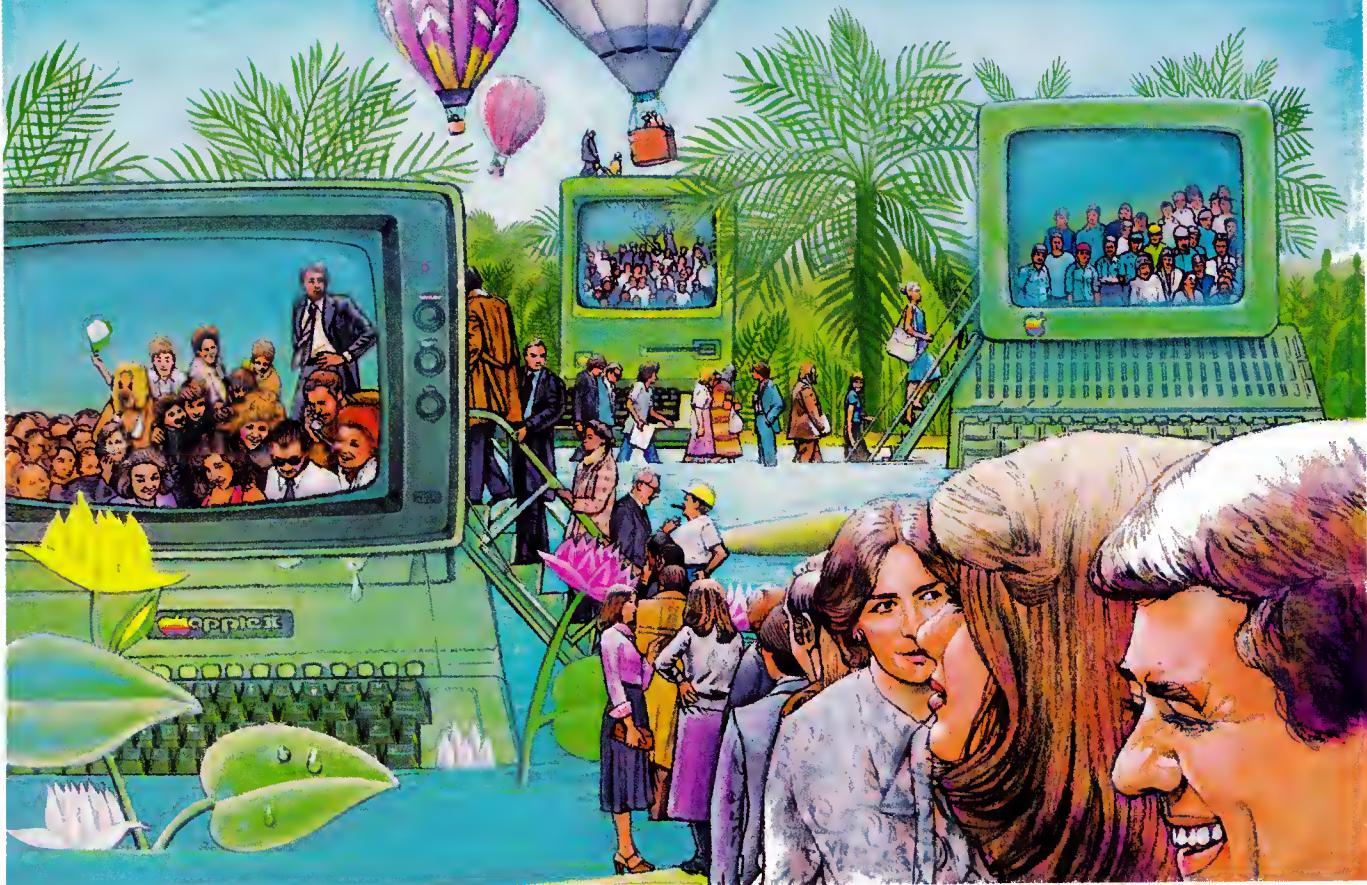
"As more and more MIPS [millions of instructions per second] are put on a single board, we will be able to use the computer to do vastly more complicated tasks," Gassée said. "When we can address more of a single problem on one computer, we will have better design decisions."

Gassée explained that "design decision" does not necessarily refer to a solution to an engineering problem, but to the overall quality of any business decision. One person with all relevant information in front of him can generally make a better decision than a committee, Gassée continued.

He predicted new-product opportunities for the development community—in particular, more simulation software—as hardware becomes more powerful.

—W.L.McK.

We're always looking for news of the Apple world. If you're making news, send your press releases and photographs to News Line, inCider, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.



USE THE BRAINS YOUR APPLE WASN'T BORN WITH.

Right at your fingertips in CompuServe's Apple® Forums.

Join the CompuServe Apple II and III Forum to swap everything from tall tales to short cuts with other users, and explore thousands of classic programs stockpiled since 1979.

Swap programs and files with fellow Mac owners in our Macintosh® Users Forum. Questions? You'll get answers from the experts here!

Visit the Macintosh Developers Forum. Get updates to the "Inside Macintosh Software Supplement." Interact with the Mac "team" in Cupertino.

The Apple User Groups Forum, supported by Apple Computer, unites officers of Apple user groups—"ambassadors" for hundreds of thousands of Apple-active enthusiasts worldwide.

Easy access to free software.

- Download First-rate, non-commercial, user-supported software and utility programs.
- Take advantage of CompuServe's

inexpensive weeknight and weekend rates (when Forums are most active, and standard online charges are just 10¢ a minute).

- Go online in most major metropolitan areas with a local phone call.
- And receive a **\$25.00 Introductory Usage Credit** with purchase of your CompuServe Subscription Kit.

Information you simply can't find anywhere else.

Use the Forum *Message Board* to send and receive electronic messages, and pose specific questions to Apple owners.

Join ongoing, real-time discussions in a Forum *Conference*—with Apple luminaries like Bill Atkinson, Doug Clapp, Dan Cochran, Jean-Louis Gassee, Mark Pelczarski, John Sculley and Steve Wozniak.

Search Forum *Data Libraries* for free software, user tips, transcripts of previous CompuServe online conferences and more.

Enjoy other useful services like:

- **Popular Computer Magazines**—electronic editions, for your reading pleasure. Including *Apples Online*, which reprints

articles from leading user group newsletters nationwide and other Apple-related publications.

- **Other CompuServe Forums**—supporting *Jazz™* and other *LOTUS®* products. *Microsoft®*, *MicroPro®*, *Borland International®*, *Ashton-Tate®* and other software. Also *Pascal*, *Basic*, *C*, *Forth*, *Assembly* and other programming languages.

All you need is your Apple computer and a modem... or almost any other personal computer.

To buy your Subscription Kit, see your nearest computer dealer. Suggested retail price is \$39.95. To receive our free brochure, or to order direct, call 800-848-8199 (in Ohio, call 614-457-0802). If you're already a CompuServe subscriber, type GO MAUG (Micronetworked Apple Users Group) at any ! prompt to see what you've been missing.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

800-848-8199

In Ohio, Call 614-457-0802

An H&R Block Company

Computers

Central Point Software

Laser 128K Computer 389.00
Tha Laser 128 includes an Expansion Slot, RGB Video Output, Parallel Printer Port, and a 10 Key Numeric Keypad! Most Apple Compatible Computer Available at Any Price!

Back-Up Utilities & Boards

Alpha Logic Locksmith 6.0	58.00
Central Point Software	
Copy II Plus Version 6	20.00
WildCard II	70.00
Computer Applications	
Nibbles Away III/NADOL	59.00
Golden Delicious Software LTD	
CIA Files	46.00
Utilico Software E.D.D. IV	29.00
E.D.D. IV Plus (II, II+, IIe w/Disk II)	105.00
E.D.D. IV Plus (IIe w/Disk II or UniDisk)	115.00

Entertainment

Access Software Bach-Head II	26.00
Accadole Dam Busters or Fight Night	20.00
Hard Ball or Laws of the West	20.00
Psi-5 Trading Co.	20.00
SunDog V2.0	23.00
Activation	
Alcazar or Master of the Lamps	25.00
Alter Ego (Mala o Famala)	22.00
Borrowed Time	25.00
Countdown to Shutdown	25.00
Ghost Busters or Pitfall II	25.00
Great American Road Racer	25.00
Hacker or Space Shuttle	25.00
Little Computer People Discovery Kit	25.00
Mindshadow or Treceer Sanction	25.00
Ster League Baseball	20.00
Avalon Hill Under Fire!	36.00
Avent-Garde Dave Winfield's Batter Up	24.00
Joe Thaisman's Pro Football	24.00
Bantam Publishing	
Cava of Time or Escape	22.00
Fourth Protocol	25.00
I'Demiano the Wizard of Partestrade	25.00
Sherlock Holmes: "Another Bow"	25.00
Baudville Video Vegas	18.00
Blue Chip Software	
Millionaire, Tycoon, Barron or Squire	32.00
Broderbund	
Captain Goodnight & the Islands of Fear	22.00
Championship Loda Runner or Keratka	22.00
Mask of the Sun or Serpent's Ster	25.00
Where in the World is Carmen, San Diego?	25.00
Data East Karate Chemp	24.00
DataSoft Alternate Reality	23.00
Bruce Lee, Conen, or Mr. Do	23.00
Mind Pursuit or Crosscheck	23.00
The Goonies or Zorro	23.00
The Never Ending Story	23.00
221B Baker Street	23.00
Electronic Arts	
Adventure Construction Sat	34.00
Amnesia	31.00
Age Of Adventure or One-On-One	11.00
Berd's Tale	31.00
Carriers At War or Wilderness	34.00
ChessMaster 2000 or Ogre	27.00
Europe Ablaze	34.00
Murder on the Zinderneuf	14.00
Music Construction Set	11.00
Pinball Construction Set	11.00
Reach for the Stars	31.00
Seven Cities of Gold	11.00
SkyFox or Archon II	27.00
Software Golden Oldies	24.00
Super Boulder Dash	11.00
Timothy Leary's Mind Mirror	24.00
EPYX	
Balblazer or Rescua on Fractulus	25.00
Berbie or G.I. Joe	19.50
Korone Rift or The Eldolon	25.00
Summer Games II or Wintar Games	25.00
Temple of Apshai Trilogy	25.00
World's Greatest Baseball Game	24.00
World's Greatest Football Game	25.00
Firebird Elite	25.00
Cotocosis Chess TV	25.00
Heyden Software Sargon III	32.00
Intocom A Mind Forever Voyegeing	26.50
Cuthroats, Seastalker, or Ballyhoo	24.50
Deadline, or Starcross or SpellBreaker	30.00
Hitchhiker's Guide to the Galaxy	24.50
Infidel or Sorceror	27.50
Witness, Planetfall, or Enchator	24.50
Zork I, Wishmaster, or Fooblitzky	24.50
Zork II, Zork III, or Suspect	27.50
Micro League Sports	
Micro League Baseball	24.00
General Manager/Owner	24.00
Microprose	
Crusade in Europe or Conflict in Vietnam	25.00
Decision in The Desert	25.00
F-15 Strike Eagle or Acrojet	22.00
Gunship, Silent Service, or Kennedy Approach	22.00
Solo Flight or Neto Commander	22.00
Mindscope Dick Francis High Stakes	25.00
Forbidden Castle or Voodoo Island	25.00
James Bond: "A View To Kill"	25.00
James Bond: "Goldfinger"	25.00
Racer	28.00
Rambo: "First Blood Part II"	25.00
Stephen King's "The Mist"	25.00
The American Challenge Sailing	25.00
The Halley Project	19.00

Omnitrend Software	
Omnitrend's Universe I	62.00
Omnitrend's Universe II	39.00
One Step Software Gold Best Pinehurst	31.00
Origin Systems Moebius	39.00
AutoDuel	34.00
Ultima III: Exodus or Ultima IV	39.00

Polarware	
Tha Quest, Frank & Ernest or Oo-Topos	15.00
Coveted Mirror, Xyphus or Transylvania	15.00
Sword of Kadash or Crimson Crown	15.00
Random House Alpine Encounter	20.00
Sierra On-Line Championship Boxing	22.00
Kings Quest or King's Quest II	32.00
The Black Cauldron	25.00
Simon & Schuster	
Spy Hunter or Tapper	19.00
Star Trek (Kobayashi Alternative)	25.00
Sir-Tech Wizardry	31.50
Knight of Diamonds	22.00
Legacy of Lyliyamyn	25.00
Rascue Raiders	22.00
Wisprint	16.00
Spectrum Holobyte Gato	22.00
Synapsa Software	
Brimstone, Mindwheel, or Essex	27.00
Strelegi Simulations	
Battalion Commander	24.00
Battle For Normandy	24.00
Battle Group	36.00
Battle of Antientam or Field of Fire	30.00
50 Mission Crush or Broadsides	24.00
Gemstone Warrior, or Wizard's Crown	24.00
Gaopolitique 1990 or Rails West	24.00
Germany 1985 or Carrier Force	36.00
Imperial Galactum	24.00
Kampfgruppe or Reforger 88	36.00
NAM or Professional Tour Golf	24.00
North Atlantic '86	36.00
Phantasia II, or Panzer Grenadier	24.00
Ring's of Ziffin, or Colonial Conquest	24.00
U.S.A.F. or Mach Brigade	36.00
Wer in Russia	48.00
Subglot Flight Simulator II	35.00
Tallarium Amazon or Dragon World	24.00
Fehrenheit 451 or Shadow Keep	24.00
Nine Princess in Amber	24.00
Parry Mason: Mandarin Murders	24.00
Randavous with Rama	24.00
Windhem Classics	
Alice in Wonderland or Robin Hood	26.00
Below The Root or Swiss Family Robinson	26.00
Wizard Of Oz or Treasure Island	26.00

Springboard Newsroom	34.00
Certificate Maker	34.00
Newsroom Clip Art Collection Vol. 1	17.50
Newsroom Clip Art Collection Vol. 2	23.50
Graphics Expander Vol. 1	23.50
Weekly Reader Stickybear Printer	24.00

Sorcim/US SuperCalc3a	105.00
Styleware Multiscribe	51.00
Timeworks	
Silvia Porter's Financial Planner	62.00

Educational Software

Addison Wesley Smart Eyes	38.00
Apple Apple Logo // 128K //e, //c only	79.00
Bantam Books	
Fantastic Animals or Road Rally USA	25.00
The Complete Scarsdale Medical Diet	25.00
Barron's Computer SAT Revised Version	32.00
Baudville Guitar Wizard	17.50
Ted Bear Discovers Rainy Day Games	17.50
Batter Working	
File & Report or Spreadsheet	38.00
Homework Helpers: Math Word Problems	32.00
Homework Helpers: Writing	32.00
Work Processor	37.00
Brainpower Think Fast	
Broderbund	
Science Tool Kit Master Module	38.00
CBS Software Adventure Master	14.00
America Coast to Coast	24.00
Body in Focus or Dinosaur Dig	24.00
Forecast! or T-Rex	29.00
Goren's Bridge	45.00
Mastering The SAT	56.00
Success w/Algebra (ea.)	19.50
Success w/Math (ea.)	13.50
Davidson & Associates	
Alge-Blaster, Classmate or Math Blaster	28.00
Gramma Gremlins	28.00
Speed Reader II	39.00
Speed Reader Data A, B, D, or D	11.95
Spell-It or Word Attack!	28.00
DLM Alligator Mix or Demolition	
Division	
Create with Garfield! or Fraction Fuel Up	18.50
Freddie's Puzzles or Number Farm	19.00
Spelling Wiz or Word Invasion	19.00
Fisher Price Alpha Build or Logic Levels	15.00
Peter Rabbit Reading	25.00
Up & Add Em or Sea Speller	15.00
Grolier Publishing EduCelc	32.00
Friendly Filar or Easy Graph	26.00
Science Island or Treasure Hunter	26.00
Harcourt, Brace, Jovanovich	
Computer SAT	
Intracourse Analysis Module	36.00
Intracourse Compatibility Module	29.00
Intracourse Analysis & Compatibility	
Module	
Learning Company Addition Magician	23.00
Bumble Plot, Games, or Reader Rabbit	25.00
Gertrude's Puzzles or Secrets	28.00
Juggla's Rainbow	19.00
Magic Speller or Word Spinner	22.00
Moptown Hotel, Parade, or Number	
Stumper	
Robot Odyssey I or Rocky's Boots	31.50
Milliken The Milliken Word Processor	45.00
Mindscape Crossword Magic	31.50
Keyboard Cadet or Luscher Profile	25.00
Perfect Score SAT	45.00
Peachtree/Eduware Algebra 1, 2, or 4	23.00
Algebra 5 & 6	27.00
Decimals or Fractions	22.00
Compu-Read (V 3.0)	16.50
Introduction to Counting	12.50
PSAT or SAT Word Attack Skills	16.50
PSAT/SAT Analogies	19.00
Spelling Bee w/Reading Primer	22.00
Writing Skills 1, 2, 3, 4 or 5	22.00
Forecast (64K or 128K)	38.00
Nolo Press Will Writer (Version 2.0)	29.00
PBI Software Graphworks 12C	45.00
Jeeves	29.00
Peachtree	
Back To Basics Accounting System: GL/AR/AP	99.00
Back To Basics GL, AP, AR	52.00
Pinpoint Publishing Pinpoint V1.3	39.00
PinPoint Spelling Checker	
Point To Point	
Inlomerge	
PinPoint // Upgrade Kit	
PinPoint Ram Enhancement	
PinPoint Modem Enhancement	
PM Software	
ProFILER 2.1	69.00
Professional Software Fleet System 3	
Integrated Word Processing, Spell Checking & Thesaurus	
Quark Catalyst // V3.0	52.00
Word Juggler & LexiCheck //e	59.00
Roger Wagner Publishing Mouse Write	75.00
The Write Choice	29.00
Satellite Software WordPerfect	69.00
Sensible Software Bookends-ProDOS	69.00
Sensible Grammer	56.00
Sensible Speller-Dos or ProDOS	69.00
Slerre On-Line Homework Plus (128K or HomeWord File)	45.00
Screenwriter Professional //e	79.00
Simon & Schuster	
JK Lasser's Money Manager	49.00
JK Lasser's Income Tax	44.00
Webster's Spelling Checker	32.00
Software Publishing	
All Programs //a with 128K or //c	
PFS: Workmates (File/Report/Plan/Write)	139.00
PFS: File, Graph, Report	74.00
PFS: File/Report BUndle	74.00
PFS: Write or Plan //e, //c)	74.00

Communications

Apple Computer Access II //a, //c only	62.00
Compuserve Compuserve Starter Kit	27.00
Dow Jones Dow Jones Membership Kit	22.00
Hayes Smartmodem I	72.00
Hayes Terminal Pgm. (Smartmodem)	59.00
Microstuff Crosstalk	105.00
QuickTerm //e	62.00
Software Publishing PFS: Access	125.00
United Software Industries	
ASCI: Express Pro: Prodos or Dos 3.3	79.00

Business Software

Advanced Logic Systems SpellWorks	29.00
The Handlers //l+, //le, //lc)	27.00
Apple Apple Works //la, //lc)	199.00
Apple Writer // 2.0 ProDOS //la, //lc)	119.00
QuickWrite //le only	79.00

Utility/Language Software

Apple Computer

Apple II Instant Pascal	110.00
Apple Pescel V1.3	199.00

Beagle Brothers

MicroWorks or Beagle Basic	19.00
Beagle G.P.L.E.	26.00
Big U, Double Take, or Pro-Byter	18.50
D-Coda or Extre K	21.00
DiskQuick or I.O. Silver	16.00
Dos Bos or Silicon Sealed	13.00
Fat Cat	18.50
Tip Disk #1	11.00
Proto Dos or Utility City	15.50
Triple Dump	21.00
Portand Turbo Pascal 3.0	42.00
Turbo Database Tool Box	34.00
Turbo Tutor	22.00
Funk Software	
Sideways Prodos & Dos 3.3	34.00
Meacom	
UniDos (Dos 3.3 for the UniDrive)	26.00
Quality Software Bag of Tricks II	32.00
Beneath Apple Dos or Bananah Apple ProDOS	13.00
Roger Wagner Merlin ProDOS	59.00
Merlin Assembler	42.00
Merlin Color Pack	69.00
Visible Computer: 6502	36.00
The Byte Works	
ORCANE Macro Assembler ProDOS	59.00
VideoX Prodos Modify 128K	49.00
Wiberg Brothers	
DMP Utilities (ImageWriter or Epson)	35.00
Great 6502	65.00

Graphics Packages

Activation Gama Makar

31.50
28.50

Baudville Blazing Paddles

42.00
29.00

Pix-It

12.95
34.00

Pix-It Shape Library 1, 2, or 3

||
||
||

In Connecticut Call 378-3662 or 378-8293

TimeWorks	
Evelyn Wood Dynamic Reader	44.00
Weekly Reader	
Exploring Tables & Graphs 1 or 2	20.00
Pic Builder	22.50
Stickybear Series: Sticky Bear ABC, Car Builder, Basket Bounce, Bop, Math, Numbers, Opposites, Reading, Shapes, Spellgrabber, Typing, & Townbuilder (each)	22.50

Modems

Anchor Automation	
Signman express 1200	235.00
Signalman Lightning 2400	355.00
Volkmodem 12	179.00
Hayes Hayes Micromodem //e	139.00
Hayes 300 Baud Smartmodem //c	159.00
Hayes 300 Baud Smartmodem	139.00
Hayes 1200 Baud Smartmodem	359.00
Hayes 2400 Baud Smartmodem	579.00
Transet 1000	269.00
Novation Novation Apple Cat II	189.00
Novation 212 Apple Cat II	355.00
Novation 212 Upgrade	219.00
Novation 2400 Baud External	479.00
Prentice Popcom X-100 (1200 Baud)	245.00
Prometheus	
Pro Modem 1200 (External)	279.00
ProModem 1200G (Non Expandable)	199.00
Pro Modem 1200A (Internal)	249.00
Pro Modem 300c	89.00
Options Processor or Alphanumeric Display	69.00
U.S. Robotics	
U.S. Robotics Password 1200	199.00
U.S. Robotics Courier 2400	399.00
Zoom Telephonics Zoom/Modem //e	105.00
Zoom/Modem //a Plus	115.00

Accelerators/Ramcards Z-80/80 Col.

Advanced Logic Systems	
Add-Ram 16	65.00
Add-Ram 80/64	52.00
Add-Ram 80/256	145.00
Z-Engine 2.2	125.00
Apple Computer	
Apple II Memory Expansion Card	225.00
Apple //e Extended 80 Col. Card	89.00
Apple //e Enhancement Kit	45.00
Applied Engineering	
RamWorks II (64K to 3 MB)	Call
RamFactor (256K to 1 MB)	Call
Phasor (11+ or 11a)	215.00
Z-RAM //c (256 or 512K)	Call
Ramworks RGB Option & 16 Bit Option	Call
TransWarp Accelerator	Call
TransWarp 16 Bit Upgrade	Call
ViewMaster 80	109.00
Z-80 Plus	109.00
Applied Technology Laboratories	
EasyCard Advanced Set (II+ or IIa)	239.00
Light Pen w/Cursor Control	159.00
Apricorn Apricorn 84K Extend-It	75.00
Apricorn 16K Ramcard II+	79.00
AST Research	
MegaRamPlus w/64K	125.00
MegaRamPlus w/256K	179.00
SprintDisk w/256K	189.00
SprintDisk w/512K	269.00
Checkmate Technology	
MultiRam CX (512K)	149.00
MultiRam CX (512K)	189.00
MultiRam //e (128K)	129.00
MultiRam //e RGB (128K)	159.00
MultiRam //e (256K)	149.00
MultiRam //e (256K)	179.00
MultiRam //e (512K)	179.00
MultiRam //e RGB (512K)	225.00
Zee-ouA	53.00
Clircle Flipster-Ram-Card	275.00
Information Appliance SwiftCard	69.00
Micro Scl Micro Scl 80/64e	69.00
Microsoft Microsoft Softcard II	265.00
MCT MTC Speed Demon	155.00
Titan Industries Saturn 128K Ram Accelerator //e w/Point	175.00
129.00	
219.00	

Multifunction Cards

AST Research	
Multi I/O Clock/Calendar	99.00
Multi I/O Clock/Calendar/2 Ser. Ports	139.00
Prometheus VERSAcard	129.00
Quadram Multicore w/OK	149.00
Multicore w/256K	179.00
Specify Apple Or IBM RGB Cable: Extended Multifunction Board (64K)	159.00
Extended Multifunction Board w/RGB (Apple or IBM RGB)	189.00
RGB Upgrade (Apple or IBM RGB)	45.00
Street Electronics	
Business Card Parallel	155.00
Business Card Serial	135.00
Videx PSIO Dual Function Interface	139.00

Printer Interface Cards

Apple Apple Super Serial Card	115.00
Apricorn Apricorn //c	54.00
Super Serial Card	92.00
Interactive Structures	
Pkaso/U Interlace	125.00
Orange Micro Serial Grappler Plus	75.00
Grappler+	75.00
Buffered Grappler+	119.00
Grappler //c	79.00
Imagebuffer 64K (For ImageWriter II Printer)	69.00
Hot Link	49.00

Practical Peripherals Graphicard	62.00
PrinterFace	49.00
SeriAll Interface Card	95.00
Quadrant	
APIC Parallel Interface with Cable	69.00
APIC C/G Parallel Interface w/Color Gr.	75.00
Serial Interface (AB-400)	71.00
Buffered Serial Interface (64K)	109.00
Street Electronics Alphabits II	79.00
TextPrint Print-It! (Parallel or Serial)	125.00
Thirdware	
Finger Print Plus II+, //e, //c	89.00

Clock/Calendar	
Peripherals	

Applied Engineering	
TimeMaster H.O.	99.00
BSR Interface	39.00
//c System Clock	65.00
Quadrant	
Pro Dos Clock/Calendar Card	62.00
Creative Peripherals	
Seiko Datagraph 2001 w/Time Trax	149.00
Time Trax //a //c	79.00
//c System Clock	55.00
Street Electronics Livewire	70.00
Thunderware Thunderclock Plus	109.00
X-10 (USA) Inc.	
X-10 Powerhouse Computer Interface	49.00
Extra Modules (For Lamps, Wall Switches, & Appliances)	15.00

Video Cards	
Video 7	
Color Enhancer //e w/Dazzle Draw	125.00
Color Enhancer //c w/Dazzle Draw	89.00
Screen Enhancer //e	95.00
Screen Enhancer //c	55.00

Accessories	
Kensington System Saver	59.00
Cool + Time	69.00
Curtis Diamond	30.00
Curtis Emerald	36.00
Curtis Ruby	54.00
Curtis Sapphire	47.00
Apple Mouse //a	119.00
Apple Mouse //c	85.00
Pico Universal Joystick II+, //e, //c	25.00
Hayes Mach II Joystick	29.00
Hayes Mach III Joystick	35.00
Kraft Quickstick //c	49.00
Kraft Joystick //	21.00
Koala Pad Plus w/Graphics Exhibitor	79.00
Trackhouse Keypad //a (Standard)	74.00
Trackhouse Keypad //e (Programmable)	139.00
Mockingboard A Board	75.00
Mockingboard C Board	119.00
The Cricket //c	125.00
Echo II Plus	99.00
Rainbow Paper Pak (300 Sheets)	12.00
ImageWriter Ribbon-Black	4.50
ImageWriter Ribbon-Color	5.00
ImageWriter Rainbow Pack (6 Colors)	27.00
Environmental Software: Apple Skins	
Apple //c or //a w/Monitor II Cover	19.00
Apple //c w/Color Monitor Cover	21.00
Apple //e Professional System Cover	23.00
Apple //c, //e, or UniDisk Drive Cover	7.00

Blank Media	
5 1/4" Blank Diskettes	
BASF 5.25" SS/DD (box of 10)	10.50
Elephant 5.25" SS/DD (box of 10)	10.50
Verbatim 5.25" SS/DD (box of 10)	10.50
Sony 5.25" SS/DD (box of 10)	10.25
Maxell 5.25" SS/DD (box of 10)	10.25
Nashua 5.25" SS/DD (box of 10)	12.50
Memorex 5.25" SS/DD (box of 10)	13.00
3M 5.25" SS/DD (box of 10)	12.00
Dysan 5.25" DS/DD (box of 10)	15.99
BASF 3.5" DS/DD (box of 5)	14.00
Bulk (Sony) 3 1/2" DS/DD (box of 10)	24.00
Centech 3 1/2" DS/DD Color Disks (box of 10)	24.00
Sony 3.5" DS/DD (box of 10)	27.00
Fuji 3.5" DS/DD (box of 10)	26.00
Verbatim DS/DD (box of 10)	28.00
Maxell 3.5" DS/DD (box of 10)	28.00
3M 3.5" DS/DD (box of 10)	28.00

Printers	
Brother	
HR-15XL (20cps) Daisywheel	319.00
HR-25 (23cps) Daisywheel	519.00
HR-35 (35cps) Daisywheel	729.00
TwinWriter 5	839.00
Forlitz/Dynax	
DH-25 (23cps) Daisywheel Par./Ser.	469.00
DX45 Dual Head Printer	839.00
Citizen	
120-D (120cps) W/NLO 10" Carriage	189.00
MSP-10 (160 cps) 10" Carriage	289.00
MSP-15 (160 cps) 15" Carriage	388.00
MSP-20 (200 cps) 10" Carriage	329.00
MSP-25 (200 cps) 15" Carriage	469.00
Epson	
LX-80	
DX-10/20 Call For	Call
FX-85 Most	Call
FX-286 Recent	Call
LO-800/1000 Low! Low!	Call
SO-2000 Prices	Call

Juki	
6000 (10 cps) Daisywheel/Par.	179.00
6100 (18 cps) Daisywheel/Par.	349.00
6200 (30 cps) Daisywheel/Par.	488.00
6300 (40 cps) Daisywheel/Par.	678.00
Qikidata Okimate 20 Color Printer	Call
Microline 182P or 183P	Call
Microline 192P or 193P	Call
Microline 292 or 293P	Call
Microline 192 or 193 Apple	Call
Panasonic	
KX-1080AP (100 cps)	
ImageWriter Compatible	239.00
KXP-1080 (700 cps) NLO Mode	199.00
KXP-1091 (120 cps) NLO Mode	249.00
KXP-1092 (180 cps) NLO Mode	299.00
KXP-1592 (160 cps) NLO Mode	429.00
KXP-1595 (240 cps) NLO Mode	579.00
KXP-3131 (16 cps) Daisywheel	259.00
KXP-3151 (23 cps) Daisywheel	399.00

Silver Reed	
EXP-500P (16 cps) Daisywheel	169.00
EXP-550P (20 cps) Daisywheel	269.00
EXP-800P (40 cps) Daisywheel	659.00
Star Micronics NX-10 (120cps) Parallel	249.00
SG-15 (120cps) Parallel	389.00
SD-10 (160cps) Parallel	339.00
SD-15 (160cps) Parallel	449.00
SR-10 (200cps) Parallel	488.00
SR-15 (200cps) Parallel	589.00
Toshiba	
P-321 24 Pin (16cps) Par./Ser. 10"	499.00
P-341 24 Pin (216cps) Par./Ser. 15"	799.00
P-351 24 Pin (288cps) Par./Ser. 15"	1079.00

Disk Drives/Hard Drives

AST Research	
MicroStor 10MB Tape Backup Only	955.00
MicroStor 10MB Hard Disk Only	955.00
MicroStor 10MB Hard Disk w/10MB Tape Backup	1475.00
Corvus Systems	
OmniDrive Hard Drives	589.00
H & M Disk Drive Services EquiDisk+ 737K of storage on each Drive!	Call
Includes 2-5.25" Drives w/Controller, Power Supply & Cables, Apple DuoDisk Side by Side Design!	
Micro Scl Scl II Full Height	149.00
A5 Slimline //e	149.00
A5 Slimline //c	159.00
Micro Scl II Controller	55.00
MITAC AD-1 Full Height //e	139.00
AD-3C Slimline //e or //c	129.00
Pico Products	
Apple Half-Height II+, //e, //c	139.00
Quark	
OC-10 Hard Disk //e, //c or Mac	799.00
OC-20 Hard Disk //e, //c or Mac	999.00

Monitors

Amdek	
Video 300G 12" Green Monitor	119.00
Video 300A 12" Amber Monitor	125.00
Color Monitor 600 (RGB)	399.00
Color Monitor 722 (RGB)	499.00

PROGRAMS

PLUS

Visit Our New Showroom: Exit 32 Off I-95

Station House Square

2505 Main Street

Stratford, Conn. 06497

Compare

the leading Apple® //e memory cards for value and quality

Some questions you should ask before buying a large memory card

Is it designed for tomorrow as well as today?

Both cards can be expanded to 1 megabyte. But what about tomorrow when you need more memory?

Just add our original MultiRam™ //e card for another 3/4 megabytes or the MultiRam™ Plus card for up to 5 megabytes. They fit on the back of MultiRam RGB so they never conflict with any other boards.

RamWorks' chips are soldered to the board making repair more difficult and lengthy.

In the past Steve Wozniak endorsed RamWorks. However, we wonder if he or any other competent engineer approves of scraping identifying numbers off RamWorks' components. They say this is done to slow down the clone makers, but it also keeps honest users and dealers from making a quick repair.

MultiRam's current AppleWorks memory expansion software allow up to 23,000 records, almost 50% more than RamWorks. Most serious users will never exceed 6,000 records.

No matter how much memory you have, MultiRam's more efficient memory usage allows more records in the same amount of RAM.

So what does it all mean?

Thousands of satisfied customers know that Checkmate offers outstanding quality and value.

Memory Expansion Connector

Slot 1 side



MultiRam™ RGB

Memory Expansion Connector

Slot 1 side



RGB add on

RamWorks II®

RamWorks II® memory expansion cards sit on the front where they may touch a printer board. What's more, the original 512K RamWorks I® card has become obsolete because it can't be combined with RamWorks II®.

Another mark of Checkmate's commitment to the future is the exclusive SRAM port. When the SRAM pack is attached to the port, programs and files can be stored in battery-backed RAM for up to 10 years. SRAM may become the next replacement for the hard disk drive allowing data exchange between the Apple and IBM.

Is it built for easy service?

MultiRam cards were the first memory cards to offer a 5 year warranty. Fully socketed and labeled components make for quick and easy repairs if they are needed.

Is RBG standard or a costly option?

MultiRam RGB features built-in Apple RGB video output. The same capability for RamWorks costs \$129 for additional hardware that uses 25% more power than a comparable MultiRam board.

Is the board compatible with all popular software?

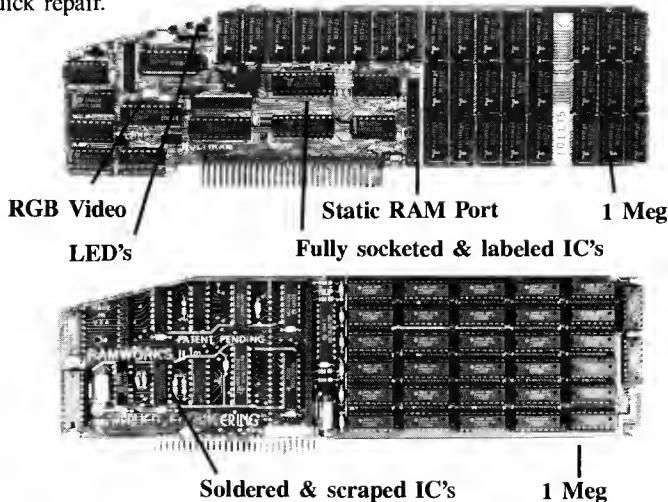
MultiRam RGB is compatible with ALL popular Apple software. Be sure that the board you chose is compatible.

How many database records do you need?

Using large data bases is the most popular AppleWorks feature for many large memory card owners.

MultiRam's current AppleWorks memory expansion software allow up to 23,000 records, almost 50% more than RamWorks. Most serious users will never exceed 6,000 records.

No matter how much memory you have, MultiRam's more efficient memory usage allows more records in the same amount of RAM.



If you still have any doubt about which product offers the best value and quality, visit your dealer and personally compare for yourself - or - call our toll-free number (800) 325-7347 to request a detailed, written comparison of MultiRam RGB and RamWorks II.

MultiRam™ RGB

From \$199.95 with 64K RGB cable extra

Checkmate Technology



509 S Rockford Dr. • Tempe, AZ 85281
(602) 966-5802 • (800) 325-7347
MCI Telex: 6502788652

In Canada Contact EDP Marketing (403) 482-3014

APPLE CLINIC

by Jim Sather and Paul Statt

Apple Clinic is a forum for discussing Apple II hardware, software, and related subjects. If you have questions or answers, or want to make a statement, write to Apple Clinic, inCider, Elm Street, Peterborough, NH 03458.

To Enhance or Not to Enhance?

What are the advantages of enhancing my Apple //e? Are there any disadvantages? If I enhance it, can I still run all the programs I now have?

Gerry Orten
Grafton, WI

The Apple //e Enhancement kit contains a 65C02 MPU, new program ROMs, and a new video ROM with mouse text. Improvements in the ROM code (firmware) include improved IRQ/BREAK handling, a 6502 miniassembler, an ASCII Monitor input mode, a Monitor search command, faster and smoother 80-column text scrolling, and Monitor, Applesoft, Pascal, and ProDOS interpretation of lowercase keyboard input.

A few programs and peripheral cards don't work with the enhanced //e (see " //e Enhancement and Peripherals," May 1986, p. 21). I don't know all the software packages that have problems, but I do know that the inverse-display line at the top of the DOS 3.3 Apple Writer screen has mouse text where uppercase letters should be. I also know that older versions of Beagle Bros' Double-Take don't scroll backward in 80-column mode. Beagle Bros corrected the problem as soon as the enhancement became available.

I have the enhancement in my //e. I didn't fight city hall on this one, because the improvements are substantial. The Monitor and scrolling improvements are important to me, and programs that don't work with the enhancement are balanced out by programs that work only with the enhancement. Also, since Apple now produces the Apple //e with the enhancement, the enhanced //e is gradually becoming the standard //e.

If you can burn 2764 EPROMs, it's fairly easy to build a socket/adapter to let you select mouse text or old inverse text for programs that have text-display compatibility problems. The construction of the socket/adapter from a 28-pin IC socket and a switch is shown in the accompanying Figure, reproduced from my book Understanding the Apple //e.

The source file for the 2764 is made up of the old video ROM and the enhanced video ROM. Transfer the contents of both ROMs to a disk file using your PROM burner. Merge the files (BLOAD OLD.VID, A\$2000; BLOAD NEW.VID, A\$3000) and burn to 2764. Install the 2764 in the socket/adapter, and install this combination in the motherboard video-ROM socket. You can now switch the mouse text on and off.

A product called Switchback lets you switch between the enhanced and unenhanced versions of all three affected ROMs. In other words, you can switch the enhancement in or out with the exception of the 65C02. The 65C02 doesn't cause any incompatibility problems that I know of, so

Switchback is a very good solution to enhancement compatibility problems. You need an NTSC (American) Apple //e and both the enhanced and unenhanced ROMs to use Switchback.

Switchback has one drawback, though. Its instruction sheet states that you can select between firmware versions only when you turn on your computer. In my opinion, requiring the user to turn the Apple off and on to switch functions is bad design.

—J.S.

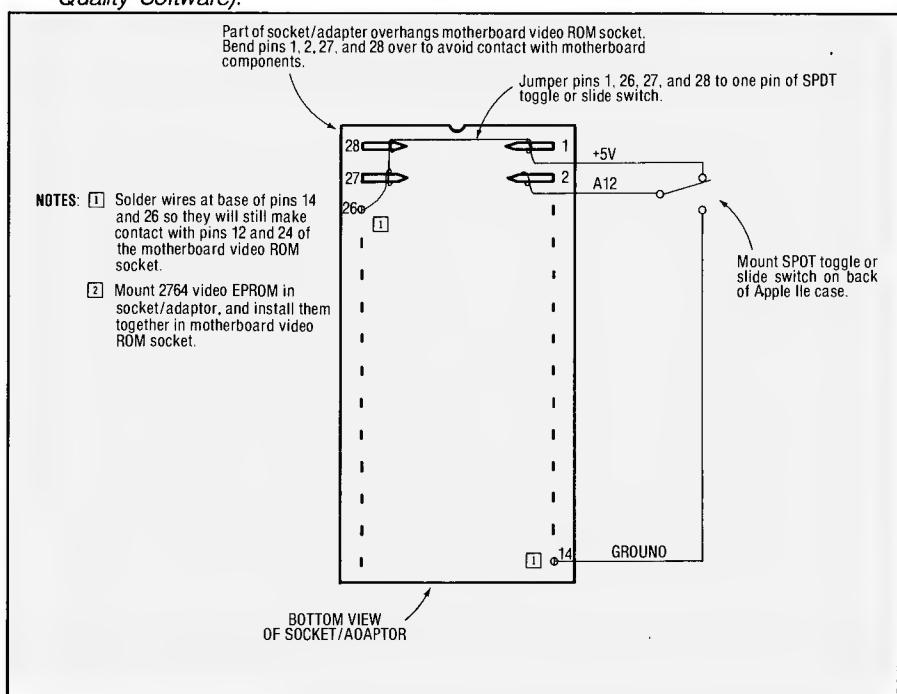
Enhancement Too Expensive

I'm thinking about enhancing my "old" Apple //e, but my Apple dealer charges \$70. A friend of mine heard of a way to order the chips directly from Apple. Do you have any information about this? I'd prefer not to spend \$70 to upgrade a \$2000 computer because Apple decided to put new chips in.

Joel Lazzaro
Saginaw, MI

You have a good point, Joel. Why should you pay to keep your com-

Figure. 64K video EPROM adapter (reproduced with permission from Quality Software).



puter current when Apple offers an upgrade that makes the old computer incompatible with some software? Looking at it from the other direction, though, the enhancement contains a number of valuable improvements, and it's reasonable for Apple to make a profit from the products it develops, including upgrades.

Apple sells products directly to some special customers, such as dealers, certified Apple developers, and educational groups. Your friend probably knows someone who's in a

position to take advantage of such status and told him he ordered the enhancement kit directly from Apple. For the vast majority of Apple owners, though, there's no way to order products directly from Apple.

It's possible to copy the enhancement ROMs to EPROM if you have access to a PROM burner that burns 2764 and 2732 EPROMs. Most user groups have a member or two with such a PROM burner. A 65C02 and three EPROMs cost about \$20-\$30, depending on your sources. Of

course, you're infringing on Apple copyrights if you copy the ROMs for yourself without purchasing them, so I don't condone it.

—J.S.

More Apple //c Numeric Keypad

This letter is in reference to "Apple //c Keypad" in the April 1986 Apple Clinic (p. 25). My company markets a numeric keypad for the Apple //c that requires no electrical modification to the computer. The keypad simply plugs into the keyboard connector, and the cable is routed out the side. The keyboard plug connects to pins on the keypad plug.

We also have a version that lets you unplug the keypad when you don't need it. You install this version the same way, but you must cut out a notch in the side of the computer and mount a 25-pin DB connector.

We're very proud of our product and feel that it's a solution to a problem that faces many Apple //c users. It's been on the market since January 1986.

John G. Richmond
C & M Manufacturing
Huntsville, TX

Thanks for the information about your product, John. I haven't actually seen it in use, so I can't give it a firsthand recommendation, but I'm sure many Apple //c users will be glad to know that such a product is available.

—J.S.

Wrong Keyboard ROM

I got a "deal" on a numeric keypad for my Apple //e at a computer flea market, but I have a problem: My Tectron keypad came without instructions. It works fine, but the up-and down-arrow keys don't function. Since the keypad was designed to plug into the Apple //e keypad connector, all keys should operate.

Can I reconfigure the jumper pad near the keyboard connector to fix my problem?

Robert J. Bell III
Bensalem, PA

Apple made a minor change in the keyboard ROM during production of early NTSC (American) Apple //e's. The company never publicized this fact; I know of it only because I discovered it while writing Understanding the Apple //e. Apple made minor changes to the Dvorak layout, and

PRINT-QUICK

5 essential printer support utilities in one easy-to-use product

WHY PURCHASE SEPARATE PRODUCTS AT GREAT EXPENSE WHEN PRINT-QUICK DOES IT ALL AND DOES IT BETTER?

A "MUST" FOR EVERY SOFTWARE LIBRARY!

QUICK-SETUP: Easily control ALL printer features including International Characters, Page Length, Skip-Over-Perf, Left Margin, and Horizontal Tabs. Download and select supplied Customer Character Sets. Save frequently used setups to EXE Cable Setup Files.

QUICK-TYPER: A full featured one-line-at-a-time text editor that can imbed print feature commands *within* a line. Text may be sent right to the printer or to a standard text file. Wonderful for labels and quick memos! Unique Preview Line feature makes learning the fanciest printing techniques easy!

QUICK-DUMPER: Simply the best and the easiest-to-use Hi-Res screen printer around! Use the Quick'N'Easy Mode for one button screen printing or go into Total Control to select your own print parameters. Print all or just part of the Hi-Res screen with super easy keyboard, joystick or mouse cropping. Quick-Dumper always tells you the size of your picture before you print it!

QUICK-FONT: The finest Downloadable Character Set Designer/Editor available! Four character sets included on the disk. Use the special graphics character set with Quick-Typer or your favorite word processor to create custom business forms.

TEXT FILE UTILITIES: Print text files or display them on the screen with all hidden command characters revealed!

OVER 30 DETAILED HELP SCREENS and a **QUICK REFERENCE CARD** allow immediate use of PRINT-QUICK supporting the fine 150 page three-ring bound Owner's Manual.

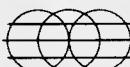
PRINT-QUICK SUPPORTS: The Sider Hard Disk Drive (and other DOS 3.3 volume oriented hard disks), Apple compatible 80 column cards and RAM cards, Apple compatible clock cards, the Apple Mouse, and the Mockingboard.

PRINT-QUICK RUNS on the entire Apple II Family.

PRINT-QUICK supports printers made by Apple Computer, Citizens, C. Itoh, Epson, Okidata, NEC, Star Micronics and their compatibles.

Ask your local dealer for PRINT-QUICK. Feel free to call us at (216) 671-8991 at any time to find out more about PRINT-QUICK (or call 1-800-233-WAVE and place an order! MC & VISA accepted).

PRINT-QUICK,
only \$49.95



THIRD WAVE TECHNOLOGY INC.

TM

11934 Lorain Ave. • Cleveland, OH 44111

PRINT-QUICK, QUICK-SETUP, QUICK-FONT, QUICK-TYPER, QUICK-DUMPER and THIRD WAVE TECHNOLOGY are trademarks of Third Wave Technology, Inc. Apple is a reg. TM of Apple Computer, Inc. Mockingboard is a reg. TM of Sweet Micro Systems, Inc. Sider is a reg. TM of First Class Peripherals.

Table. Converting a 342-0132-B keyboard ROM to 342-0132-C equivalent EPROM.

Address		Old Data				New Data				Remarks	
	242C, 2478,	262C	3F	2F	3F	2F	22	27	22	27	Dvorak / ?
	22A4, 20CC,	24A4, 24CC,	26A4	22	27	22	27	3A	3B	3A	3B
20A4,	22A4,	24A4,	08	08	08	08	0A	0A	0A	0A	Dvorak ' "
20CC,	22CC,	24CC,	1B	1B	1B	1B	0B	0B	0B	0B	keypad left
		24E8,	3A	3B	3A	3B	3F	2F	3F	2F	keypad ESC
20F4,	22F4,	24F4,	15	15	15	15	08	08	08	08	Dvorak ; :
2118,	2318,	2518,	3F	3F	3F	3F	1B	1B	1B	1B	keypad right
211C,	231C,	251C,	20	20	20	20	15	15	15	15	keypad ?
		271C									keypad space
											→ right

deleted space and question-mark ASCII from the numeric-keypad layout to accommodate the up and down arrows. This change affects only users of the Dvorak keyboard layout or the numeric keypad on early Apple //e's.

It sounds as if you've got the older keyboard ROM, since your up- and down-arrow keys don't work. If so, pressing the up arrow yields escape ASCII, and pressing the down-arrow yields left-arrow ASCII. The earlier ROM is labeled 342-0132-B; the current ROM is labeled 342-0132-C.

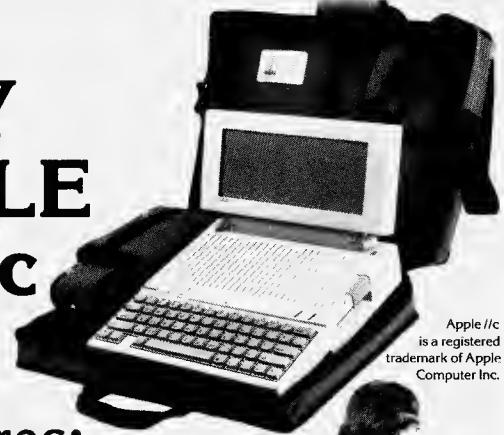
It's possible to modify the -B keyboard ROM if you have access to a PROM burner that can program 2716 EPROMs. Use the PROM burner to read the -B ROM, then save the ROM contents as an \$800-byte binary disk file. BLOAD the -B ROM file to \$2000-\$27FF and make the changes shown in the Table. BSAVE the contents of \$2000-\$27FF to disk so that you'll have a working copy of the -C ROM, and burn the same data to the 2716 EPROM as a replacement for the original keyboard ROM.

If you don't have access to a PROM burner, try asking your Apple dealer for a free swap. I've sent your address to an Apple employee who's familiar with Apple //e keyboard ROMs, Robert. I'm hoping he'll send you information about obtaining a current keyboard ROM.

The X6 jumper near the keyboard connector has nothing to do with an external keypad. Soldering X6 ties the SHIFT' line to the PB2 game-I/O pushbutton input, so that pressing either shift key activates PB2. This is equivalent to the Apple II Plus shift-key mod, and may be necessary if you want to utilize old II Plus software that doesn't recognize lowercase keyboard ASCII. I recommend soldering X6 for //e owners who don't have anything connected to PB2, so they'll have a convenient way to activate PB2 should the need arise. —J.S.

FIRST TOTALLY PORTABLE APPLE //c

Take it with you
everywhere!



Apple IIc
is a registered
trademark of Apple
Computer Inc.

System Features:

- 24 Line by 80 Character LCD Display
- 8 Hour rechargeable power supply
- 21 lb. total system weight including //c
- Durable Cordura carrying case with handle and shoulder strap

Lowest Prices Yet!

• C-VUE Flat Panel Display*	REDUCED! 349.00
• PRAIRIE POWER Battery Pack and Case	REDUCED! 150.00
• Checkmate Technology Specials:	
512K Multiram™ CX Board	REDUCED! 225.00
768K Multiram™ RGB Board	NEW! 269.00
768K Multiram™ //e Board	NEW! 219.00
• Apple //c Computer	750.00

NEW! No Portable System Is Complete Without These:

• Apple //c Cigarette Lighter Adapter	29.95
• Apple //c Power Extension Cable	19.95
• Apple //c Power Y-Adapter	22.95

FREE! Price Quotes on all Apple Products & Peripherals

Ordering Information:

1-800-438-2883 (outside California)
(619) 274-1253 (within California & outside U.S.)
MasterCard and VISA accepted

ROGER COATS
P.O. Box 171466, San Diego, CA 92117

*14-day
money-back
guarantee

Checkmate Technology, Inc.
Prices subject to
change without notice

Magic Window Patch

For Patch Central, here's a modification to the Gemini 10X printer driver of Magic Window version 2.E0. The original driver reverses the superscript- and subscript-control characters (control-A and control-B, respectively). To patch the driver, boot DOS, then BLOAD GEMINI.10X.OBJ0. Save a copy of the original by typing BSAVE GEMINI.10X.OBJ0.ORIG, A\$800, \$L200. Type CALL -151 to enter the Monitor, and change \$908 from \$81 to \$80, and change \$90C from \$80 to \$81. Type BSAVE GEMINI.10X.OBJ0, A\$800, L\$200 to save the patched driver.

Tony Pizza
Camarillo, CA

Yours is the first patch sent to Patch Central (see Apple Clinic, April 1986, p. 21), and it's exactly what I'm looking for. I don't use Magic Window or a Gemini printer, so I have no way of knowing about the

discrepancy or patch. Your patch makes it possible for Apple Clinic to help the community of Apple users, even though I'm unfamiliar with the subject. Thanks for your contribution, Tony.

I hope other readers will contribute to Patch Central. I probably won't print all the patches I receive, but I'll keep a list of them and print it from time to time. —J.S.

Apple II Plus Obsolete?

I use my Apple II Plus with ScreenWriter II for word processing, and with VisiCalc for home accounts, income-tax calculations, and making tables of scientific data. I also use The Accountant, a special-purpose accounting program, to maintain two checking accounts and look after rental property and investments. I also use PFS:File. My Apple has 64K of RAM, and I'm sure I could do these things better and faster if my computer had more memory.

Is my Apple II Plus obsolete? The articles and ads in *inCider* clearly indicate a bias against the old II and II Plus. Apple peripherals and software are limited, in many cases, to the //e and //c. Furthermore, Apple Computer's offer to let schools trade in their old Apples for new ones implies that the old ones leave something to be desired.

Although memory-expansion cards are available for the II Plus, the keyboard doesn't have the extra keys found on later computers, and it's not clear whether I'll be able to use software designed for the //e and //c.

John McClendon
Lincoln, NE

Obsolescence comes, crushingly quickly, to microcomputers, but it's a relative thing. Though it isn't unequivocally obsolete, there's no doubt the Apple II Plus is more obsolete than the //c and //e. This is true partly because the 128K of standard RAM and the improved keyboard, display, and firmware encourage development of software that takes advantage of the more powerful //e and //c. It's also true because a computer that's been out of production for more than three years simply doesn't generate as much excitement in the marketplace and, consequently, not as much hardware or software support as it once did.

Products designed only for the //e and //c, coupled with improved versions of Apple II computers, contribute further to Apple II Plus obsolescence. Even though Apple fights this trend with the development of important peripherals like the Slinky RAM card, I believe it's inevitable. The II Plus isn't obsolete, but Apple //e owners have a far greater advantage than II Plus owners.

Apple owners who use their computers as extensively and broadly as you do would definitely benefit from owning an Apple //e or //c, but you'd still be saddled with compatibility problems. Most older software doesn't utilize the big //e and //c RAM cards you see advertised. The RAM-card manufacturers include software to modify AppleWorks to utilize the extra RAM, but leave modification of most other programs to the usually unwilling software vendors. —J.S.

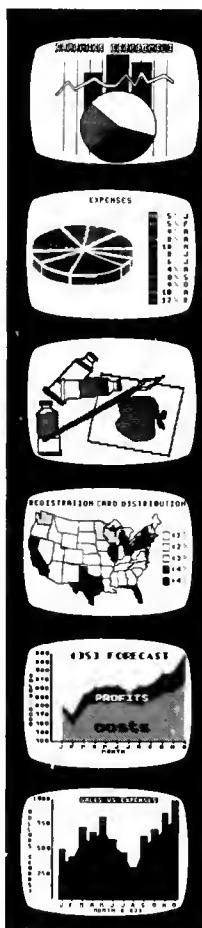


CHART LETTER DRAW SHOW

It's almost like having your own graphic artist!

Try the new, improved and more complete GRAPHICS DEPARTMENT™

Available for Apple Computers for \$124.95.



Sensible Software, Inc.

210 S. Woodward,
Suite 229,
Birmingham, MI 48011
(313) 258-5566

Apple is a trademark of Apple Computer, Inc.

AppleWorks for All

We'd like to use AppleWorks with our II Plus. Can you tell me what changes or additions would be necessary, and whom we can contact for parts and information?

Anthony Schiraldi
Mira Mesa High School
San Diego, CA

AppleWorks requires ProDOS, so you'll need 80 columns and 64K—try Apple's 80-column card. Software that configures AppleWorks to run with a II Plus is available from two sources: Norwich Data Services (P.O. Box 356, East Norwich, NY 11732, 516-922-9584) sells PlusWorks for \$49.95, and Davka (845 North Michigan Avenue, Suite 843, Chicago, IL 60611-2201, 312-944-4070) offers ItWorks for \$39.50. NDS suggests that Apple's Apple II Memory Expansion board, designed to work with the II Plus, makes a nice addition. —P.S.

TaxWorks

The federal government now allows W-2 reporting on 5 1/4-inch disks. We have 160 employees, and I'd like to convert to magnetic-media reporting. We use enhanced Apple //e computers. What software can I use to enter data? Would the AppleWorks spreadsheet do the job?

Robert Hampton
Brothers of the Holy Cross
Austin, TX

Thanks for sending along the Social Security Administration's "Annual Reporting Plan for W-2 Information Using 5 1/4" Diskettes." The requirements are as follows:

- a. "A diskette must be 5 1/4" in diameter.
- b. Data must be recorded in standard ASCII code.
- c. Records must be fixed length, 128 bytes per record.
- d. Delimiter characters comma (,) and carriage return/line feed (cr/lf) must not be used.
- e. Diskettes must meet one of the following specifications...: capacity: 140kb; tracks: 48 tpi; single-sided/single-density; sector size: 256; operating system: Apple II."

If "Apple II operating system" means ProDOS, AppleWorks should do the trick. You should print your spreadsheet files to disk—a disk text (ASCII) file. When you put that information into a data base, each record

must be 128 bytes long (I'm assuming the SSA knows how long a single record needs to be, and that it's 128 bytes or less). Don't use anything other than a letter of the alphabet as a filename, pathname, or record name—that is, as a "delimiter character"—and you'll be safe on point d. Standard Apple disks are fine. —P.S.

AppleWorks and UniDisk 3.5

Last April I had a chance to visit the U.S.A. and buy a UniDisk 3.5. It was a short trip, so I asked the dealer just about installation. "Plug it into your computer and run it; the Owner's Manual is very clear," he said. I wondered how I could choose to access either the UniDisk 3.5 or the external drive.

When I got home, I installed my UniDisk 3.5 according to the manual. The UniDisk is properly plugged into the Apple //c, and my old external drive is plugged into the UniDisk. The //c external drive works as usual, but my UniDisk 3.5 ejects disks and its red light comes on—I have no access to that disk.

AppleWorks offers three options for saving files: drive 1, drive 2, and ProFile or other ProDOS directory. None succeeded in waking up the UniDisk. I tried calling my UniDisk 3.5 a ProFile, but AppleWorks next wants a pathname. Since I can't access the UniDisk, I have no formatted disks and, thus, no pathnames.

What should I do to access the UniDisk?

Paulo Almeida Machado
Campinas, Brazil

I hope not everyone in the U.S. was as unhelpful as that Apple computer dealer. The UniDisk 3.5 Owner's Manual basically says nothing in five different languages—you need extra help.

To use AppleWorks with your //c, your dealer must change motherboards. Yours let you down badly, and I'm afraid I can't help. The UniDisk 3.5 motherboard upgrade for the //c also fixes some bugs in ROM.

You can write data files on the UniDisk 3.5 with any version of AppleWorks. If you want to boot AppleWorks 1.1 or 1.2 from a 3 1/2-inch disk, you'll need your ProDOS Utilities to format a 3 1/2-inch floppy, and you'll have to copy all your AppleWorks start-up and program files to that disk.

One Apple Clinic reply regarding AppleWorks 1.3's compatibility with

the UniDisk 3.5 may have caused some confusion (see the June issue, p. 27). The answer is correct, if by compatible you mean that AppleWorks comes on a 3 1/2-inch disk and that you can format a 3 1/2-inch disk from AppleWorks.

On the other hand, you can use a UniDisk 3.5 in any slot of your unenhanced //e as a disk drive for data with no problem: Format the disk with the ProDOS Filer, and use the ProFile option in AppleWorks. You can boot AppleWorks from your UniDisk 3.5 by writing PR#x in BASIC, where x is the number of the slot in which your UniDisk 3.5 controller card is installed.

If you have an enhanced //e, put the UniDisk 3.5 controller card into slot 7: If you have AppleWorks on the UniDisk, it will boot. (Actually, it's necessary only to have the UniDisk controller in a slot with a number higher than that of your 5 1/4-inch drive-controller slot.)

Apple never offered a free upgrade from AppleWorks 1.2 to version 1.3. It cost \$20 last spring, but that deal is no longer in effect. If you want AppleWorks 1.3 today, you must pay the full price. The "klugy" solution to putting early AppleWorks onto your UniDisk 3.5 begins to make sense.

Remember, whenever anybody tells you can't do something with your Apple II, you probably can. —P.S.

Product Information

Apple //c keypad
C & M Manufacturing
2400 Avenue I
Huntsville, TX 77340
(409) 291-6005
\$10.95 (\$65 each for three)
Add \$20 for plug-in model

Reader Service Number 300

Switchback
Computer Accents
P.O. Box 5905
Kingwood, TX 77325
(713) 664-9727
\$59.95

Reader Service Number 301

Understanding the Apple //e
Quality Software
21610 Lassen #7
Chatsworth, CA 91311
(818) 709-1721
\$24.95

Reader Service Number 302

Random Routines

When I started programming in assembly language, I came across a problem: I need a way to find random numbers from my assembly-language program. I haven't found any reference to the subject; I tried to write a routine myself, but haven't been successful. Can you explain how I would go about getting random numbers from assembly?

Gregory Gulik
Norridge, IL

It's no surprise that you had trouble writing a random routine for your Apple: you can't. The best an Apple can manage is a pseudorandom number. You can use the Monitor routine KEYIN, and read a true 16-bit random number at \$4E and \$4F: This trick works because the length of time between keystrokes is never the same. It's a slow method and gets you only one number at a time.

Don Lancaster has written a good, fast pseudorandom-integer generator. You can get it—and eight other

routines—in his Assembly Cookbook for the Apple II/IIe (Howard W. Sams).

—P.S.

//c Testing

A friend told me I could check my Apple //c by just pressing the two programmable apple keys, control, and reset at the same time, but he's got a //e. Please tell me how to test my //c.

German Sumbre
Buenos Aires, Argentina

Your //c has so many good things in ROM that Apple had to leave some out—like the Monitor self-test the Apple //e can run. Enhanced //e's and //c's can't run the test. If you have a //e, by the way, you need to use only the solid-apple, control, and reset keys. Sorry.

—P.S.

Happy Memories

I plan to buy a RamWorks RAM card, but I have a question: Applied Engineering says you can use 64K or 256K RAM chips in any combination

on its boards. Catalogs such as *JDR Microdevices* print only the name of the chip, not its memory capacity. Can you buy a RAM chip and plug it into the RAM card? Which RAM chips can you use?

Bob Park
Bloomfield Hills, MI

What's in a name? Everything, if you're talking about RAM chips. The number on your RAM chip ends in either 256 or 64—that stands for 256K or 64K. When you add RAM chips be sure that each bank includes only one chip size—64K or 256K—and that the timing is the same in all chips in one bank. Look for a small number with a dash in front of it on the chip: -15 stands for 150 nanoseconds, -20 for 200 nanoseconds, and so forth. Ideally, each bank should have six chips identical in memory and timing. By the way, expanding your memory this way is a clever idea (for more information, see "Two Roads to Memory Expansion," p. 46 in this issue).

—P.S.

1200 BAUD MODEMS

Coit Valley Computers has two modems for your every need. Both are top quality state-of-the-art 1200/300/110 baud **Hayes™ compatible** modems; which means your computer can send & receive data at lightning fast speeds! And automatically switch between 1200 and 300 baud to communicate with slower Apples. Since neither comes with software, we carry Ascil Express ProDOS at a low price of \$89.

AVATEX™ 1200 EXTERNAL STAND-ALONE MODEM

- 100% plug in Modem for **Apple IIc** or **Macintosh** with proper cable (see below). **Hayes compatible**.
- Universal modem that only requires modem compatible serial card (or port), & cable, to plug into **Apple IIe**, **Apple II+**, or **IBM**.
- Auto Answer, Auto Dial, Auto Redial, Auto Disconnect
- Full Bell 212A compatibility
- Automatically switches between 300 baud & 1200 baud incoming speeds
- Complete diagnostics & full complement of LEDs (TR, SD, RD, HS, MC, TM, RI)
- DATA/VOICE Button switches from talk to data transmission & back again
- FREE Compuserve offer & free access time. One year warranty.

\$169.

- Built-in Super Serial Card equivalent
- 1200/300/110 baud operation and Bell 212A compatibility
- Built-in Speaker & Diagnostics
- Auto Dial, Auto Answer, & Auto Select. Two year warranty.

2400 BAUD MODEMS — Call

CABLES REQUIRED WITH AVATEX MODEMS

Apple IIc - Avatex Cable	.....	\$ 22.
Apple IIe, II+ - Avatex Cable	.....	25.
Macintosh - Avatex Cable	.....	27.
IBM - Avatex Cable	.....	23.

OTHER APPLE PERIPHERALS

IIe/II+ Serial Modem Card	.....	\$ 99.
RGB Monitor for Apple IIe (+ \$24 cable)	.....	324.
Ascil Express ProDOS	.....	89.
Multiram RGB cards (facing page)	.....	→

With prices this low, how can you afford to be without a 1200 baud modem? Just the savings in connect time, will pay for the difference between a 300 & 1200 baud modem. You can get everything you need from Coit Valley Computers. Shipping on modems \$5-Ground/\$8-Air; monitors \$10. See terms on facing page.

Hayes, Avatex, Apple-Mate respective registered trademarks of Hayes Microcomputer Products, E+E DataComm, Cemetek Micro.

CERMETEK APPLE-MATE™ 1200 INTERNAL MODEM

- Internal 1200 baud modem for **Apple IIe** or **Apple II+**
- Only one card & takes only one slot w/ no external interface or power supply. **Hayes compatible**.

\$209.

COIT VALLEY COMPUTERS • 14055 Waterfall Way, Dallas, TX 75240 • (214) 234-5047

7 Meg IIe/640k IIc

Don't buy yesterday's card that doesn't offer battery backed-up **STATIC RAM** or 65C816 new Apple technology just because it's advertised a lot! You can buy Checkmate Technology's **State-Of-The-Art MULTIRAM RGB RAM CARD™** with **BATTERY BACKED-UP STATIC RAM** options that can load & save programs (like AppleWorks) for 10 years! It is a **FASTER & LESS EXPENSIVE REPLACEMENT FOR HARD DISKS**, is **USER EXPANDABLE TO 6 MEGABYTES**, compatable with all (100%) 3rd party software/hardware, has an optional real 16-Bit 65C816 slot saver Co-Processor card, sharp 80 columns, super Double Hi-Res, & **BUILT IN RGB!** It's a direct substitute for Ramworks II™ or Apple Ext 80 column cards & has an amazing 5 year warranty! Unlike Ramworks II, MultiRam fits ALL (even Euro) Apple IIe's, can't interfere with slot 1 cards & has no soldered chips!

MultiRam RGB expands to 1 Meg main RAM + 4 Meg's piggyback RAM + 2 Meg's BATTERY BACKED-UP RAM. **MultiRam IIe** expands to 768k & can piggyback w/ MultiRam RGB. **A POSSIBLE 7 MEGABYTES IN ONE SLOT - MORE THAN RAMWORKS II & Flipster™.**

FREE APPLEWORKS EXPANDER SOFTWARE that loads ALL (even printer routines or PARTS of AppleWorks, runs 30 x faster, increased Desktop over 2048k, auto-segments large files onto multiple disks, stores over 23,000 records & 5000 lines! **FREE APPLEWORKS TIME/DAY/DATE ON-SCREEN, AUTO-COPY TO RAM, ULTRA-FAST PRODOS/DOS 3.3 RAM DISK & RAM TEST**, optional CP/M & Pascal Ram disk! Printer Buffer due anytime.

	MultiRam	MultiRam
	RGB	IIe
	Card	Card
64k MULTIRAM	169.	129.
128k MULTIRAM	179.	139.
320k MULTIRAM	206.	175.
576k MULTIRAM	241.	214.
832k MULTIRAM	266.	239.
1024k MULTIRAM	284. ← ← ← ← ←	
1344k MULTIRAM	449.	-
1600k MULTIRAM	484.	-
1792k MULTIRAM	519.	-
256k Memory Chips-1 yr warranty (8)	55.	
Apple IIe Enhancement Kit	62.	
Accelerator IIe-350% speedup card (IIe/II+)	222.	
CP/M & Pascal Ram Disk IIe/IIc (ea.)	20.	
Clockworks Card (Thunder/Time HO™ comp)	89.	
Pico™ Slimline Drive IIc, IIe, II+	158.	
FD-100 Slimline Drive IIe, II+	115.	
Pinpoint Program or Spell Checker (ea)	49.	
65C816 EX Co-Processor Card	157.	
RGB Monitors, Connectors & Cables*	call	

Terms: Add \$4-Ground or \$6-Air shipping & phone # to each U.S. card order (foreign orders/FPO/APO extra). Add 3% for MasterCard/Visa (include #/expir) & P.O.'s (3% 7 Net 30). For fast delivery send Cashier's/Certified check, Money Order, C.O.D. (add \$5) & personal checks accepted (allow 16 days). **Tex res add 6 1/2% tax.**

MultiRam, Ramworks/Ramworks II/Timemaster II H.O./Z-ram, Pico, Flipster, respective trademarks of Checkmate Technology, Applied Engineering, WGE, Cirtech.

Checkmate Technology's **State-Of-The-Art MULTIRAM CX** card easily expands your IIc up to 640k, is 100% compatable with all IIc software/hardware, & comes with the **SAME FREE SOFTWARE as MULTIRAM IIe** (see above). **MULTIRAM CX** can be upgraded with a real 65C816 kit (unlike Z-Ram™) to likely run software for the new Apple computer!

- **UNLIKE Z-RAM, THERE ARE NO JUMPER WIRES, CLIPS TO ATTACH, SOLDERED CHIPS, OR DRIVE REMOVAL REQUIRED FOR INSTALLATION.**
- **USES ABOUT 50% LESS POWER** than Z-RAM causing less power supply strain or battery pack drain!
- **15 DAY MONEY BACK SATISFACTION GUARANTEE, 5YR WARRANTY, & LOWER PRICES** - We sell IIc cards for much less & our software updates are **FREE & AUTOMATIC**, while others charge \$10 or more!

OUR LOWEST PRICE

256k MULTIRAM CX	189.
512k MULTIRAM CX	237.
65C816 CX Kit (\$10 less w/ card)	129.
VIP Professional w/ any 65C816	117.
1200 Baud IIc Modem w/cable	189.
IIc System Clock	66.

WHY BUY FROM COIT VALLEY COMPUTERS RATHER THAN SOME MAIL ORDER HOUSES? Only we offer an exclusive 15 day money back satisfaction guarantee, double software, more support, free **automatic** software updates, free 64k with each 256k/512k/768k IIc card. We know the products well, & we have them in stock. **CALL FOR DETAILS, CURRENT PRICES, QUANTITY DISCOUNTS, OR NEW FEATURES! SCHOOLS & GROUPS WELCOME.**

ORDER FORM

COIT VALLEY COMPUTERS (214) 234-5047
14055 Waterfall Way Dallas, Texas 75240

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE () _____ SIGNATURE _____ I8

QTY	DESCRIPTION	PRICE

MC/VISA	SHIPPING
EXP _____	TOTAL _____

COIT VALLEY COMPUTERS
(214) 234-5047

14055 Waterfall Way
Dallas, Texas 75240

When you really want to see how Apple works...

AutoWorks by Alan Bird

(AUTOMATIC AppleWORKS)

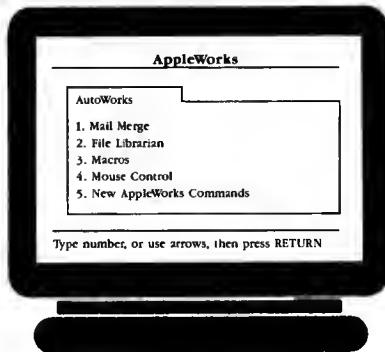
AutoWorks adds to AppleWorks several important time-saving features including mail merge, file organizing, macros, new AppleWorks commands and mouse control.

MAIL MERGE allows you to automatically print form letters and fill out forms from your Apple Works data base files. Form letters are reformatted to accommodate varying lengths of names, addresses, etc. Since AutoWorks is built-in, there is never any need to leave AppleWorks to do a mail merge.

AutoWorks allows you to use your MOUSE to make menu selections and to quickly scroll through and position the cursor in your document, data base file or spreadsheet. This feature alone is worth the price of AutoWorks.

With AutoWorks' powerful MACROS, you can automatically enter hundreds of keys including AppleWorks commands with a single keystroke. You can, for example, print out one or several reports by entering one key. The macros are easily updated instantly using the AppleWorks word processor. New AppleWorks commands are also included with macros such as forward delete, word delete, jump to beginning or end of line, etc. With macros you can even create your own AppleWorks commands.

The Disk Librarian helps you keep track of all your disk files. It reads ProDOS file information directly from your disks into an AppleWorks data base file where you may search for certain files and disks, sort on various file characteristics, find disks with free space, etc. AutoWorks is compatible with AppleWorks versions 1.1, 1.2, and 1.3.



**AutoWorks
\$39.95**

FontWorks by Mark Simonsen

Good-looking Printing for AppleWorks

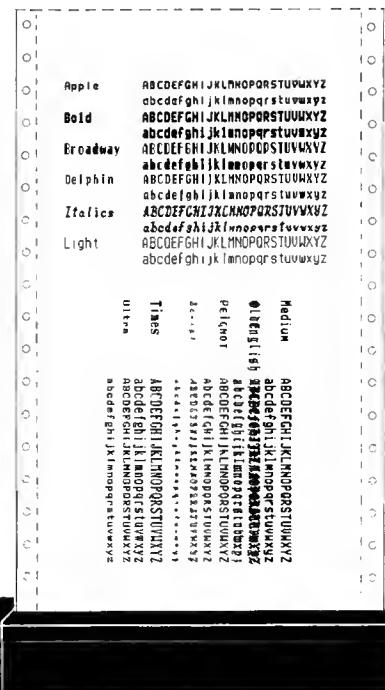
Now you can print your AppleWorks files in a variety of typefaces. FontWorks reads your Appleworks files directly (no need to save them in a different format) and prints them with the typefaces you choose. You can even print your files sideways — great for those wide spreadsheets.

There are no complicated commands to learn. FontWorks incorporates the same easy-to-use menu style as AppleWorks.

Choose from 20 typefaces of various styles and sizes, including Broadway, Delphin, Old English, Peignot, Script, Times, and many more. You can use up to 4 of these typefaces at one time when printing your AppleWorks files. And FontWorks comes with its own Font Editor, allowing you to customize our typefaces or create your own.

FontWorks works with any Apple IIe or IIc and is compatible with most popular dot-matrix printers, including ImageWriter, Epson, and Okidata.

Note: Owners of previous versions of FontWorks may upgrade for FREE by returning their original FontWorks (disk only) to The Software Touch.



**FontWorks
\$49.95**

THE SOFTWARE TOUCH™

9842 Hibert St., Suite 192 • San Diego, CA 92131 (619) 549-3091

+ \$3.00 shipping & handling, California residents add 6% sales tax
Outside U.S. add \$5.00



For Orders Only



(800) 423-5660 • IN CALIF.
CALL: **(800) 367-0012**
EXTENSION 01

(Apple, AppleWorks, and ProDOS are trademarks of Apple Computer, Inc.)

REVIEWS

BusinessCard, Fantavision, Battle of Antietam, FontWorks 1.2, Diamond, Quick-20, Challenger, Fixit

Fairly Standard

BUSINESSCARD

Street Electronics, 1140 Mark Avenue, Carpinteria, CA 93013

Multifunction board; Apple II, II Plus, II/e
\$199.95 (serial version)
\$239.95 (parallel/serial version)

Ease of setup	■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■ ■
Support	■ ■ ■
Overall	■ ■ ■

I waited two months for Street Electronics' BusinessCard: not just the waiting you do for something you know will arrive, but the avid, anxious, anticipatory kind of waiting that precedes the birth of any new high-tech device. I was despondent when it was delayed, and I practically tore the board out of the package when it finally arrived.

The BusinessCard is a multifunction board with two serial ports (a parallel/serial version is also available) and a clock. As do other boards of this type, the BusinessCard uses a phantom-slot technique to assign one of the serial ports and the clock function to two additional Apple slots. Even if no other boards are inserted in these two extra slots, you can't use them for other cards.

That procedure is fairly standard—a term that describes the BusinessCard more accurately than any three dozen handfuls of other words. Yes, Street Electronics has included some very fancy routines in the card's ROM to support a self-contained menu. And you can call up the menu functions almost anytime and activate them from your keyboard or mouse. But that's simply a matter of taking the software that multifunction-card makers supply on disk and turning it into firmware on the card. That's nothing new.

The BusinessCard includes all the usual graphics-printing utilities, such as orientation, sizing, and inverse printing, and it can interface with an impressive number of printers. It doesn't have a snapshot feature



(which dumps the screen to the printer, no matter what program is running). It supports Apple's new ImageWriter II, but I'm sure the manufacturers of older boards will supply upgrades for their multifunction cards.

So what does this card have over the Prometheus VERSAcard and AST's Multi I/O? The on-card software is certainly a nice (if mundane) feature. The serial ports end in Apple IIc-type five-pin DIN connectors, so there's cable compatibility if you have both machines. Street also supplies one DIN-to-DB-25 connector with the board.

Basically we're talking about brand recognition. Street has an excellent reputation in the Apple community for producing quality equipment at competitive prices. And that's the level at which you'll have to make your decision about the BusinessCard. ■

Bill O'Brien
Fort Lee, NJ

Editor's note: Milo Street responds, "Although the BusinessCard uses phantom slotting, the user isn't automatically tied to using two additional

slots." A modified ProDOS (supplied) lets AppleWorks and many other programs read the clock from slot 1, so only programs that look specifically for a Thunderclock or compatible clock require an extra slot. Otherwise, all three BusinessCard functions are available in two slots.

While early BusinessCards came with an ImageWriter I printer cable, current models supply two short cables that mount on the rear of the II/e and connect to IIc printer and modem cables.

Finally, Street says the card's built-in menu software, far from being "mundane," is "the first to offer double hi-res color screen dumps to the ImageWriter II," along with windowing, magnification, and text-printing features.

inCider's Ratings

Excellent	■ ■ ■ ■
Above average	■ ■ ■
Good enough	■ ■
Not up to standards	■
The empty set	□

REVIEWS

YOUR
APPLE
 TODAY,
 KEEPS THE
DOCTOR
 AWAY.



HOUSECALL

THE COMPUTERIZED
 HOME MEDICAL ADVISOR

- Written By Physicians.
- Over 400 Diagnoses.
- Concise Information accessed directly or through branching questionnaire.
- Educational—background and treatment for each condition diagnosed.
- Closely Related Diagnoses follow computer's initial choice.
- A Ready "Second Opinion".
- Fast, Easy and Fun to use.
- Self Contained—Multiple disk data base—no modem needed.
- Always Current—yearly updates available at nominal cost.

Great For Business Offices As An Employee Benefit. Also Helps Reduce Absenteeism

HOUSECALL Will Run On APPLE II +, c, e, IBM PC Family, and 100% Compatibles. Dealer inquiries invited.



**Rocky Mountain
 Medical Software, Inc.**

To Order Call Toll Free
(800) 233-3556
 For More Information Call
(303) 773-1237

List Price \$79.95 SPECIAL \$49.95

Please send _____ copies of **HOUSECALL** at \$49.95 + \$5.00 shipping (\$12.00 foreign). (Colorado residents add \$1.80 tax). 20 Day Money Back Guarantee. For Unprotected Add \$20.00.

Type of Computer _____

Name _____

Address _____

City/State/Zip _____

Check VISA MC Exp. Date _____

No. _____

Signature _____

 **Rocky Mountain
 Medical Software, Inc.**
 5680 S. Syracuse Circle, Suite 500 I
 Greenwood Village, CO 80111



Computer Cartoons

FANTAVISION

Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101

Animation software; any 64K Apple II with mouse, joystick, or graphics tablet
 \$49.95

Ease of setup

Ease of use

Documentation

Support

Overall

Big screen or small, movies grab our attention much more than still photos do. The same is true in computer graphics. We might admire a good piece of static computer art, but a computer film evokes a sense of wonder and delight.

Until recently, though, making a computer movie required hours of programming or working with difficult animation tools that always seemed to run out of memory right in the middle of your epic. But the plight of the would-be computer-movie artist has been heard.

Broderbund Software has released an exquisite piece of software art called Fantavision. With Fantavision and your mouse (or joystick or graphics tablet), you can generate some impressive films. The ease with which you can create animated graphics and the speed of the animation are, in a word, remarkable. Detailed images move smoothly about the screen, with no flicker. The high quality of the results you achieve with Fantavision is a product of the method of animation the program incorporates.

In standard animation, you must draw individual frames, usually 24 per second of projection time, and with each new frame vary the position of every object you want to animate.

Projecting the completed frames in rapid sequence produces the illusion of motion. This practice is difficult to implement on a computer because of memory requirements and processing speeds. Somewhere in memory your computer must store each object in a frame, and each different view of that object for subsequent frames. And if you're animating a number of objects, the computer can take quite a while drawing each one in its proper spot on the frame, erasing it, then drawing the next object in the sequence.

Scott Anderson, developer of Fantavision, chose another method of animation. Instead of "remembering" each frame of the film, Fantavision needs to know only the first and last frames of a particular sequence. Using a process called *tweening*, your computer automatically creates all the necessary frames (up to 64) between the two you've drawn. Your Apple does this "on the fly," while the program is running, so the animation is fast and the frames use substantially less memory. Fantavision also incorporates a feature called *transformation*, which lets you smoothly change any shape in one frame into some other shape in the next frame.

Making Movies

The Fantavision package consists of a disk with the Fantavision program and several movies you can examine and edit. (The flip side also contains a marvelous demo.) You also get the Fantavision manual, an 80-page booklet that covers the program in detail. Although Fantavision is simple to use, the documentation helps give you a feel for the program and its operation. The last page is a fold-out with a quick-reference chart of the keyboard commands (most of which you can access from pull-down menus) and a labeled diagram of the screen. For those who can't bear reading a manual until after the program is up and running, Fantavision also comes with a "quick-start" card that takes you quickly through a hands-on demonstration.

The work screen contains virtually everything you need in plain sight, easily accessible with a graphics-input device: pull-down menus of editing and disk-drive functions; a "film strip" showing your current location in the movie; and icons representing drawing and shaping functions, color (a total of 56 hues), and animation. This last box contains icons for four types of animation, depending on the effect for which you're aiming: standard;

What the Experts are Saying About RamWorks II!®

"In an informal competition called '640K vs. 640K' AppleWorks running on a RamWorks equipped Apple IIe outperformed Symphony running on an IBM PC."

—*InfoWorld*

"AppleWorks wiped out Symphony... The competition was set up partly to show off another of Wozniak's favorite things, the RamWorks II memory expansion board from Applied Engineering . . ."

—*San Jose Business Journal*

"There are huge differences among the AppleWorks modifying programs sold with the cards. Without doubt, RamWorks II is the most powerful."

—*inCider*

"Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks... I like the product so much that I am buying one for my own system."

—*A+ Magazine*

"RamWorks II is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars... For my money, Applied Engineering's RamWorks II is king of the hill."

—*inCider*



As you can see, it's easy to tell who sets the pace in Apple memory expansion. In fact, if you read the competition's ads, you'll notice that many even claim to be as good as RamWorks. Some say they're "RamWorks compatible".

At least they agree on one thing. RamWorks is the one they have to measure up to. But the truth is there aren't any substitutes for RamWorks.

Because RamWorks and Z-RAM have a mesmerizing list of characteristics that, as you use them, will change your perceptions of an Apple computer forever. Achieving a level of speed and per-

formance most critics claim is the best they've ever seen. But we want to do more than impress the experts, we want to impress you!

Applied Engineering stands ready to solve your expansion needs today and tomorrow with the largest and best supported product line in the industry.

Call Applied Engineering at 214-241-6060, 9 am to 11 pm. To get the very best.



RamWorks II®

The recognized industry standard for memory expansion in the Apple IIe.

AE™

214-241-6060

background, in which the object is "glued" to the background and doesn't move; lightning, for special effects caused by flashing in-between frames; and trace, which leaves the image of an object behind, like a trail.

Fantavision's design presents a few minor problems. First, you can't edit a graphics image pixel by pixel, since Fantavision doesn't work with pixels, but with line segments. The other hitch is that Fantavision uses standard Apple high-resolution graphics, not the double high-resolution available on newer Apple II's.

All in all, though, Fantavision is one incredible package. It's the simplest animation program I've ever used, yet it's so well designed that complex concepts are within easy reach. Plan your designs carefully for best possible results, or at least play a lot before you try anything serious. But Fantavision gives you all the tools you'll need to create outstanding electronic films. ■

Terry Johnston
Wichita Falls, TX



House Divided

BATTLE OF ANTIETAM

Strategic Simulations, 1046 North Rengstorff Avenue, Mountain View, CA 94043-1983

Battle simulation; any 48K Apple II with Applesoft and one drive
\$49.95

Ease of setup	■ ■ ■ ■
Ease of use	■ ■ ■ ■
Documentation	■ ■ ■ ■
Support	■ ■ ■ ■
Overall	■ ■ ■ ■

Saying this may get me into trouble below the Mason-Dixon line, but Robert E. Lee was *not* a military genius. Mostly, he was just smarter—and luckier—than the generals he opposed.

Lee took a few big risks during the war, but he knew that every time he did, he could count on his Union counterpart being unaware of the opportunity or too cautious to take advantage of it. Strategic Simulations' new war game, Battle of Antietam, reproduces the situation Lee created when he positioned his army so precariously that the Civil War might have ended three years early—on September 17, 1862.

Union general George McClellan had bottled up Lee's army near Sharpsburg, Maryland, with their backs to the Potomac River and outnumbered two to one. If McClellan had attacked with all his force, he might have annihilated Lee. Instead, McClellan committed only a portion of his men to the battle, and only a corps at a time. Both armies sustained heavy casualties. Lee's gave up minor amounts of real estate, but remained intact. And McClellan did nothing while the Confederates crossed their single ford over the Potomac to safety. The Union had very little to show for the bloodiest single day of combat in American history.

The Union Challenge

SSI's Antietam gives you a chance to change the outcome. As the Union or Confederate commander in this battalion-level game, you control every soldier and cannon in your army. Your opponent—a human or computer commander—exercises similar control.

The battle is easy for the Union player to win, if he doesn't opt for "activation." That feature forces him to use units piecemeal the way McClellan did, evening the odds. The Confederate player faces a substantial challenge: surviving an attack by an army twice the size of his own. If the Union general uses activation, the Confederate side can hold its own. If not, the Union player must still demonstrate mastery of tactics and maneuver to win.

Antietam's system of troop movement reflects the realities of warfare 120 years ago. Soldiers march to battle in column formation and redeploy into line of battle. Cavalrymen fight on horseback or on foot. Cannon are "limbered" (attached to horse-drawn caissons), then moved and unlimbered.

COPY II PLUS™

THE BEST, MOST COMPLETE ProDOS-DOS UTILITIES.

- Copy files, disks, even entire subdirectories.
- Undelete ProDOS and DOS files.
- Fast 2-pass disk copy on Apple IIe, IIc or Laser 128.
- Tree display for selecting subdirectories—no need to type lengthy "prefixes."
- Alphabetize catalog.
- Convert DOS to ProDOS & vice versa.
- And many more.

BACKUP YOUR PROTECTED SOFTWARE.

With COPY II PLUS' fully automatic bit copier, simply type in the name of the program you want to backup and COPY II PLUS does the rest. (We update COPY II PLUS often to handle new protections; you as a registered owner may update at any time for \$15 plus \$3 s/h.)

Parameters for hundreds of programs are right on disk. Also includes a track editor, sector editor and HI-RES disk display.

COPY II PLUS is supplied on a standard ProDOS diskette. Runs on Apple II, II+, IIe, IIc and Laser 128. Requires at least 64K and one or two disk drives.

Call 503/244-5782, M-F, 8-5:30 (West Coast time) with your in hand. Or send a check for \$39.95 U.S. plus \$3 s/h, \$8 overseas.

\$39.95

Central Point Software, Inc.
9700 S.W. Capitol Hwy., #100
Portland, OR 97219

Central Point Software
INCORPORATED

Backup utilities also available for the IBM, Macintosh, Commodore 64/128 and Atari ST.

800K for Apple //, Laser 128 Only \$285

Now you can add 800K of Apple Unidisk 3.5 compatible storage to your Apple // *at an affordable price*. Our Universal Disk Controller™ allows you to directly connect virtually any drive made for any Apple (even Macintosh) to your Apple // Plus, //e or Laser 128.

Universal Disk Controller

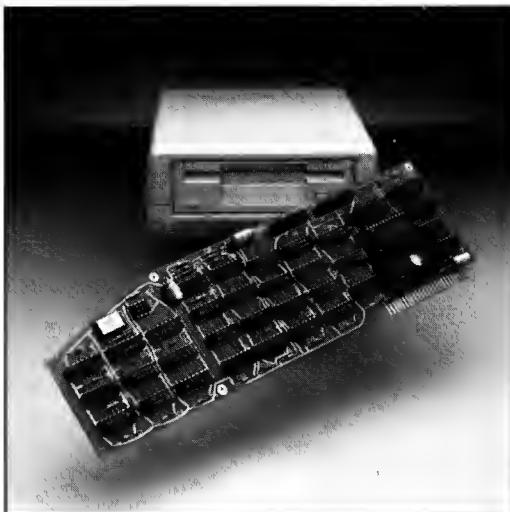
This new controller card combines the functions of 3½ and 5¼ inch drive controllers into one card. Plug in any 5¼ inch disk drive (it supports both old-style 20 pin connectors and //c style DB-19 plugs). Or directly connect an Apple Unidisk 3.5. But most remarkable, the Universal Disk Controller directly accepts Macintosh compatible 800K and 400K external drives.

Unidisk 3.5 compatible

When used with a Mac compatible drive, you still get the identical 800K format used by Apple's Unidisk 3.5—at a considerable price savings. Disks created in Apple's Unidisk 3.5 will work with a Mac drive connected to the Universal Disk Controller and vice-versa. Data Transfer rate is up to par, too. The Universal Disk Controller talks to any drive at full speed.

Mix and Match

You pick what two drives to connect. Plug in two 5¼ inch drives and use it as a standard floppy disk controller. Or connect two Mac drives for a total of 1.6 megabytes of storage. Of course, you can combine drives of different types, too. Connect a 5¼ inch drive and a Mac



800K drive, or an Apple Unidisk 3.5 and a Mac drive, or . . .

COPY II PLUS, Free!

Copy II Plus is included free with every Universal Disk Controller. This package of DOS/ProDOS utilities works with 5¼ and 3½ inch drives and was voted the utilities winner of the A+ Readers' Choice Awards.

Yes, please send me the Universal Disk Controller Card and drives indicated below. And include Copy II Plus—free!

Universal Disk Controller—\$150
For Apple //+, //e, and Laser 128.

800K 3.5 inch drive—\$195
(Works great with Macintosh, too!) *Or save on these combos:*

Universal Disk Controller & 1 drive—\$285

Universal Disk Controller & 2 drives—\$475
And ship them to me at this street address ASAP:

Name _____

Address _____

Daytime phone # (_____) _____

Everything is Included

No matter what type of Apple compatible drive you have or plan to buy, everything needed to connect it to the Universal Disk Controller is included. Even older Apple // Plus drives plug in directly without adapter cables.

Available NOW!

Call today and order your Universal Disk Controller. Find out just how inexpensive it can be to add an 800K disk to your Apple!

*Central Point
Software*

INCORPORATED

9700 SW Capitol Highway, #100
Portland, OR 97219

(503) 244-5782

To Order By Mail:

Simply send in this order form with a check (add \$15 s/h, \$30 overseas), or provide your Visa/MC

and expiration date _____

To Order By Phone:

Just call us at **503/244-5782**
8-5:30 (West Coast time), M-F, with
your in hand!

*Central Point
Software*

INCORPORATED

9700 SW Capitol Hwy., #100
Portland, OR 97219

bered before firing. At the advanced level, units can even build fortifications to strengthen a position.

Antietam's simulation of the effects of terrain also reflects the game's authenticity. The battle was fought in hill country, bisected by a deep creek and broken up by small woods, cornfields, and other obstructions. The game faithfully re-creates these features, along with their effects on sight, movement, defense, and offense.

Combat is exceptionally detailed. Troops first exchange artillery fire, with the results of the shooting immediately displayed. A phase of volley fire follows. (Rifles have an advantage over smooth-bore muskets, assuming the unit hasn't run out of ammunition.) Next comes the melee, when the formation fixes bayonets and assaults the enemy position.

Announcements of results accompany each phase of combat. The program displays the number of casualties (killed, wounded, and missing) and the effect on the unit as a whole—such as reduction in morale or an increase in

fatigue. A devastating attack can "disrupt" a unit: The unit won't be able to attack and can fire only in its own defense.

Heavy casualties and low morale can also cause a rout, in which a unit flees four spaces and becomes virtually useless except for defense. The outcome of combat may also include a forced retreat without a rout, or the elimination of a unit.

The Taste of Battle

Antietam's graphic depiction of combat and its aftermath authentically reflects a real Civil War battlefield. The realism of battle will astound and satisfy Civil War buffs (such as myself) playing this game for the first time. Even maneuvering units into position and ranging and sighting artillery are thrilling aspects of play. War gamers making their first excursions into a Civil War simulation are in for a delightful, educational surprise.

Battle of Antietam is the first worthwhile Civil War simulation from SSI—or from any other publisher, for that

matter. Every aspect of the game is highly detailed. The result is the most realistic, exciting land-battle simulation SSI has published to date—and that's saying a lot.

One final note: This is the first application of a new game system that will enable SSI to publish high-quality simulations of 18th- and 19th-century battles. Bravo to authors David Landrey and Chuck Kroegel, who are currently working on a simulation of the Battle of Gettysburg. If Antietam is any indication, Gettysburg should be both realistic and exciting. ■

Brian J. Murphy
Fairfield, CT



The Perfect Type

FONTWORKS 1.2

The Software Touch, 9842 Hilbert Street, Suite 192, San Diego, CA 92131

Printer utility and font editor; any Apple II with dot-matrix printer
\$49.95

Ease of setup	■ ■
Ease of use	■ ■ ■
Documentation	■ ■
Support	■ ■ ■
Overall	■ ■ ■

How would you like to add some pizzazz to your dot-matrix printer? Even printers that boast pica, elite, and compressed modes will change their tune when they discover what FontWorks can do. This nifty, affordable program can turn your Apple II and dot-matrix printer into a desktop publishing system, limited only by your imagination and creativity.

FontWorks comes on a "flippy" disk, ProDOS on side 1 and DOS 3.3 on side 2. (The folks at *The Software Touch* haven't forgotten that many of us use DOS 3.3-based word processors.) And FontWorks isn't copy-protected, so

LEGEND™ CARDS

EXPAND APPLEWORKS™

on Apple II, II+, IIe,
IIC and Franklin

C'CARD™...1 MEG FOR IIC \$369

**FREE APPLEWORKS™ PATCH
256K to 1 MEGABYTE OF MEMORY
HIGH SPEED DISK EMULATION
USE MOUSE WITH APPLEWORKS™**

S'Card™ for the II, II+, IIe, III, Franklin

• Slot Independent • 1024K APPLEWORKS™ on Apple II, II+, IIe, Franklin

E'Card™ for the IIC

• 80 Column Display • RGB • Use Mouse with APPLEWORKS™

Send me info on:

- C'Card (IIC)
- E'Card (IIe)
- S'Card (III/II+, IIe
Franklin)
- Desktop Mouse

NAME _____

PHONE _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

LEGEND INDUSTRIES LTD. (800) 5-LEGEND or (313) 674-0953-2220 Scott Lake Rd-Pontiac, MI 48054

Legend, E'Card, S'Card, C'Card and Desktop Mouse are trademarks of Legend Industries, LTD. Apple and AppleWorks are trademarks of Apple Computer, Inc.

you can easily make backups or install the ProDOS version on a high-capacity 3½-inch or hard-disk drive.

Designing Your Document

You have to do a bit of planning if you'll be using FontWorks to print your letters, reports, posters, or brochures. FontWorks gives you a choice of 20 fonts and typestyles, including Broadway, Delphin, Old English, Italic, Script, and even Greek. FontWorks also contains a font editor, so you can adapt an existing font or create your own alphabet.

You can cluster fonts and typestyles into ten font groups, number-coded zero through nine. When you prepare a document with your word processor, insert a backslash and the font number just before the first letter you'd like printed in the chosen style. When you want to change to another font, type another backslash and the new font number.

You'll also have to give some thought to the kind of text file you're going to save. I used AppleWorks, and had to print the file to disk so that FontWorks could interpret it. The FontWorks documentation contains instructions for saving such AppleWorks documents.

A Myriad of Options

FontWorks looks and works like AppleWorks. Those familiar with AppleWorks will immediately recognize the tabbed index-card menu. You make selections by moving a highlighting bar up and down the menu with the arrow keys, pressing the return key accesses the option you choose, and pressing open apple-P prints. But I wasn't able to get open apple-H to work when I wanted to see a list of help features.

Assuming you've properly saved your text file, just start up FontWorks, select the font (or font group) you want, add your text files (you can queue them) to the desktop, and print. FontWorks requires only one disk drive, but you may find it less bothersome if you have two—one for FontWorks and one for your data disk.

FontWorks also offers a number of options in print direction (FontWorks will print spreadsheets sideways), density, and margin width. And you can configure the program for any of a number of dot-matrix printers, including Apple, Epson, C. Itoh, IDS, NEC, Okidata, Panasonic, and Star models. The configuration menu lists 49 different parallel and serial interfaces.

What do you do if the literary genius or ad exec inside you longs for a typesetting machine, but your internal accountant says no to a Mac and laser printer? For a small investment in FontWorks, you can turn your Apple II into an inexpensive, personal desktop publishing system. ■

*Cynthia E. Field
Wakefield, RI*

Play Ball

DIAMOND

Consistent Software, 1050 Duncan Avenue, Suite G, Manhattan Beach, CA 90266

Baseball-statistics utility; versions for Apple II Plus and 64K or 128K II/e or II/c; one drive (printer and second drive optional) \$69.95

Ease of setup	■■■
Ease of use	■■■
Documentation	■■■■
Support	■■■■
Overall	■■■

As unlikely as it may seem, baseball and computers were made for each other. Baseball thrives on numbers: Baseball statistics form a basis for comparison, aid in evaluations, dictate managerial decisions, and fascinate fans and players alike. And one of the things computers do best is "crunch" numbers.

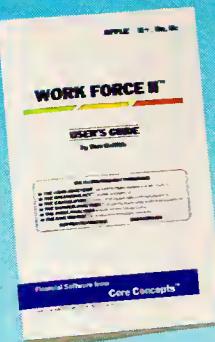
Diamond, a baseball/softball utility program from Consistent Software, maintains and updates college, high-school, and Little League player statistics. It can also manage administrative information and keep score as games are played.

As a stats keeper, Diamond is unsurpassed. Besides keeping track of players' names and addresses, it can monitor more than 30 offensive, nine defensive, and 26 pitching statistics. With a simple "fill in the form" procedure, Diamond automatically upgrades statistics as you type in individual game or series summaries, virtually eliminating any chance of mathematical error.

Continued on p. 87.

WORK FORCE II™

"A Valuable, Indispensable Tool..."



Six Financial and Productivity Programs on one disk. Menu driven, ultra friendly, powerful. Compatible with the IBM PC, XT, AT, Jr., COMPAQ, AT&T 6300, TANDY 1000, true Compatibles, and the Apple IIc, IIe, II+.

THE LOAN ANALYZER: Display or print loan amortizations starting or stopping at any period. Begin loans in mid-year. Work Force II is used by banks, CPA's & real estate professionals across America. Compare these features:

- Variable interest
- Balloon Payments
- Payment Amount
- Amount which can be Financed
- Rule of 78's
- Yearly Total Interest
- Negative Amortization
- Total Interest & Payments
- Present Value of Capital Leases

THE LINE WRITER™: Line-at-a-time correctable typewriter. Makes envelopes, forms, memos, and labels a snap. Faster and easier to use than your word processor.

THE BALANCING ACT™: Unique checkbook balancing system. No need to enter every check & deposit. Change entries, add entries, or print entries. A few minutes each month does it all.

PLUS! Full Function Printing Calculator — **Wage & Income Analysis**
Future Value of Savings, Investments, IRA's

Greg Glau, InCider "Borrowing money is no problem with the loan analysis section to guide you. Work Force II is easy to understand and operate. It's an honest value..."
Les Schmelitz, MICRO-TIMES: "WORK FORCE II may be one of the best bargains around."

**Call Toll Free
ORDERS ONLY**
1-800-525-CORE

**30 DAY
MONEY-BACK
GUARANTEE**

Apple is registered trademark of Apple Computer. IBM is a registered trademark of International Business Machines.

Core Concepts, Inc.
P.O. Box 24157 Tempe, AZ 85282
AZ residents & inquiries call (602) 968-3756

MasterCard **VISA** **AMERICAN EXPRESS**

Cards # _____
Signature _____ Valid From _____ to _____
Name _____ Phone _____
Address _____
City/State/Zip _____

CALL TOLL FREE 1-800-382-2242

Northgate Software

7 Trap Falls Rd. Shelton, Connecticut 06484

WE WILL BEAT

(See Below)

- Top our unmatched selection and inventory of software/hardware for the Mac and Apple (as well as the IBM PC and Commodore Amiga).
- School and corporate purchase orders are welcomed. CALL 1-800-874-1108.
- Special/rush orders. If something you need is not listed, hard to find, or needed in a hurry, CALL 1-800-874-1108.
- Order Status. CALL (203) 375-3860.
- Ask for System Sales when ordering a complete system.
- FREQUENT PURCHASER PROGRAM.** Any repeat customer will automatically receive \$1 off any order he or she places with us. Please mention to your operator that you are a repeat customer. We value your continuing business. Send in \$1,000 worth of invoices (representing previous purchases) and you will receive a coupon worth 1% off any future purchase. With \$5,000 worth of invoices, receive a coupon worth 5% off any future purchase.
- No additional charges for credit card orders.
- Convenient hours. 7 days/week: 9AM-11 PM EST.
- FREE AIR EXPRESS SHIPPING.** Purchase \$150 or more of software and for no additional charge we will ship your products by air courier. Mention this to your operator as you place your order.
- FURTHER DISCOUNTS BY MAIL.** Circle the items in our ad you want, send the ad in with the coupon below and receive \$.50 off each item! Cut out a competitor's ad with a lower price and we will give you \$1 off his price (subject to the conditions below).

Send coupon and list of items desired to:

DISCOUNT BY MAIL DEPARTMENT

Northeastern Software, 88 Ryders Lane, Stratford, CT 06497

To be eligible for the \$1.00 per item discount you must:

1. Fill out all items. 2. Send in our ad with the items you desire circled.

Name _____

Address _____ (Include Company Name)

City _____ State _____ Zip _____

Phone No. at above address _____

Check form of payment
Visa MasterCard C.O.D. Personal Check
Certified Check Money Order

Card No. _____ Exp. Date _____

Computer Model _____

Personal and company checks allow 3 weeks to clear. For faster delivery, send cashier's check, certified check, or money order. Shipping—Software (\$3.00 minimum). Shipping—Hardware (please call 203-375-3860). COD—Add an additional \$2.00. Alaska, Hawaii, Canada, P.O. APO, and FPO \$5.00 minimum. Foreign orders—\$15.00 minimum and 15% of all orders over \$100. Mastercard and Visa (please include card no. and expiration date). Connecticut residents add 7.5% sales tax. Prices subject to change without notice. All returns must have a return authorization number. Call 203-375-3860 to obtain one before returning goods for replacement. Defective merchandise replaces with same item only. We do not guarantee compatibility. All sales are final. "Comparable advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. The \$1 off offer only applies to items where Northeastern's price is not already the lowest. Final judgment remains with the manager on duty.

SPECIALS

ORIGIN SYSTEMS	FUNK	STONEWARE	Pronto Dos
Moebius	Sideways	31.00	Silicon Solid
Ultimo IV	Sideways Pro Dos	31.00	Triple Dump
MICROPROSE	HAVEN SOFTWARE	08 Bus. Pack or Mast Bus Team	20.50
Silent Service	The Writer	08 Master Business Winter	11.75
ALS	HOWARDSOFT	24.00	Type Faxes
Spellworks	Real Estate Analyzer III	179.00	Utility City
MEGAHAUS	INTERNATIONAL SOLUTIONS	24.00	BORLAND
Reportworks	Mouse Budget	37.00	Turbo Pascal
Megaworks	Mouse Calc	83.00	Turbo Octobase Toolbox
MICROSOFT	Mouse Desk	23.00	20.50
AppleSoft Compiler	Mouse Word	67.00	Turbo Tutor
OKI DATA	Mouse File	CALL	KENSINGTON MICROWARE
ML 92	INTUIT	49.00	System Solver
ELECTRONIC ARTS	Quicken	87.00	LAZERWARE
Autodesk	KENSINGTON	77.50	22.00
PBI	Format II Enhanced	73.00	Lisa V2.6
Jeeves	LIVING VIDEO TEXT	73.00	MICROSOFT
PINPOINT PUBLISHING	Think Tank II/IIE	73.00	AppleSoft Compiler
Pinpoint	MEGAHAUS	73.00	PERFECT DATA
MINOSCAPE	Thinkworks	73.00	Perfect Data Head Cleaning Kit
Rambo	MANZANITA	73.00	QUALITY
STEEDWATT	Business Accounting System Man	68.00	Bag of Tricks II
Stedwatt 4 outlet	Business Accounting GL/AP/AR/I	208.00	ROGER WAGNER
AVANTE GARDE	Business Accounting Payroll	245.00	Merlin
Dove Winfield's Batter Up	Adv. Bus. Acct. System Man	68.00	Merlin Combo
AVALON HILL	Adv. Bus. Acct. GL/AP/AR/I	280.00	Merlin Pro
Under Fire	Adv. Bus. Acct. Payroll	280.00	Visible 6502
BAF	Businessworks Syst. Manager	64.00	VIOEK
Bosf 55/00	Businessworks GL/AP/AR/IN	225.00	Ultraform w/55 Inv.
Y TECH	Businessworks Payroll	255.00	Video 7 RGB Interface IIE
Laser 128	MECA	104.00	Video 7 RGB Interface IIC
	Managing Your Money	104.00	
	MICROPRO	179.00	
	Wordstar	73.00	
	MICROSOFT	60.00	
	Mulithip	60.00	
	MONOGRAM	60.00	
	Dollars & Sense IIE	68.00	
	35.00 Dollars & Sense IIC	68.00	
	Forecast	35.00	
	NOLO PRESS	28.00	
	Will Writer	28.00	
	PBI SOFTWARE	57.00	
	Jeeves	35.00	
	PEACHTREE	97.00	
	Book It Up	34.50	
	Book to Basics	34.50	
	PINPOINT PUBLISHING	34.50	
	Pinpoint	34.50	
	Pinpoint Spelling Checker	34.50	
	Pinpoint Toolkit	CALL	
	PRACTICORP	25.50	
	Practical II	25.50	
	PRECISION SOFTWARE	53.50	
	Superbase	53.50	
	OUARK	58.00	
	Word Juggler w/ Lexicheck	58.00	
	Catalyst 3.3	58.00	
	SCARBOROUGH	78.50	
	ASHTON TATE	78.50	
	Ne Worth	46.00	
	SENSIBLE SOFTWARE	64.00	
	Bookends or Sensible Speller	64.00	
	The Graphics Department	64.00	
	Sensible Grammar	54.00	
	Report Card	31.00	
	SIERRA-ON-LINE	41.00	
	The General Manager II	128.00	
	Homework/Speller Bundle	41.00	
	Screenwriter IIE	76.00	
	Homework Filer	41.00	
	SIMON & SCHUSTER	0-Code	
	JK Lassers Income Tax	46.00	
	JK Lassers Money Manager	46.00	
	SORCIM	Double Take	
	Supercalc 3A	Exit K	
	Investor's Workshop	98.00	
	Market Analyzer or Microscope	43.50	
	Mkt. Mgr. or Spreadsheet Link	48.50	
	Membership Kit	1/0 Silver	
	ELECTRONIC ARTS	Macroworks	
	Financial Cookbook	72.00	
	Cut & Paste	138.50	
	STATE OF THE ART	Fonk Mechanic	
	Electric Checkbook	14.75	
		Big U	
		Pro Byter	

COPY PROGRAMS / BOARDS

Book It Up III	40.00	Fontix	30.50
CIA Files	35.00	Font Pocks 1-13	35.00
Copy II+	18.00	ELECTRONIC ARTS	25.50
Copy Master II 128K W/GR Dump	90.00	Movie Maker	25.50
Edd IV Plus II/IIE/IIE	40.00	PENGUIN	25.50
EOO IV PLUS II/E/W/QUO/UNI OISK	56.00	New Complete Graphics System	46.00
Locksmith 6.0	69.00	Graphics Magician	34.50
Wildcard II	56.00	Col Graphics	21.00
	57.00	SENSIBLE SOFTWARE	64.00
	57.00	Graphics Department	64.00
	57.00	PFS: Graph Doc or Pro Dos.	68.50
	57.00	SPINNAKER	25.00
	57.00	Delta Drawing	25.00
	57.00	Springboard	25.00
	57.00	Clip Art Collection Vol. 1	16.50
	57.00	Clip Art Collection Vol. 2	20.50
	57.00	Graphics Expander	23.00
	57.00	Newsroom	31.00
	57.00	WEEKLY READER	20.50
	57.00	PIC Builder	20.50
	57.00	Zoom Graphics	37.50

BUSINESS

ADVANCED LOGIC SYSTEMS	ARTSCI	BEAGLE BROTHERS	EDUCATIONAL
The Handlers Package	65.00	Apple Mechanic	AODISON WESLEY
List or Word Handler	37.00	Beagle Basic	Smart Eyes
Spellworks	27.00	Beagle Basic	35.00
APPLE	CALL	Beagle Basic	APPLE
Applevorks	CALL	Fontix	Fontix
Applewriter II	CALL	Font Pocks	Font Pocks
Apple Access	CALL	ELECTRONIC ARTS	ELECTRONIC ARTS
Quickfile	CALL	Movie Maker	Movie Maker
APPLESOFT SOFTWARE TECHNOLOGY	CALL	PENGUIN	PENGUIN
Versadorm	46.00	New Complete Graphics System	46.00
ARTSCI	46.00	Graphics Magician	34.50
Magic Office Systems	146.50	Col Graphics	21.00
Magic Calc 3.3	59.50	SENSIBLE SOFTWARE	21.00
Magic Windows	88.00	Graphics Department	64.00
ASHTON TATE	299.00	PFS: Graph Doc or Pro Dos.	68.50
DBase II	299.00	SPINNAKER	25.00
BPI	299.00	Delta Drawing	25.00
Gen. Acctg. Ac. Ap. Gl. Pay	193.00	Springboard	25.00
Gen. Acctg. Ac. Ap. Gl. Pay Pro Do.	208.00	Clip Art Collection Vol. 1	16.50
		Clip Art Collection Vol. 2	20.50
		Graphics Expander	23.00
		Newsroom	31.00
		WEEKLY READER	20.50
		PIC Builder	20.50
		Zoom Graphics	37.50

UTILITY SOFTWARE / LANGUAGES

CONTINENTAL SOFTWARE	BEAGLE BROTHERS	UTILITY SOFTWARE / LANGUAGES	
Bank Street Filer	40.00	BEAGLE BROTHERS	
Bank Street Speller	40.00	Apple Mechanic	15.00
Bank Street Writer 64K or 128K	40.00	Beagle Basic	17.75
Bank Street Writer	40.00	O-Code	20.50
CBS SOFTWARE	88.00	Osk Quick	15.50
Storkpack II	41.00	Osk Boss	12.75
SCREENWRITER	41.00	Double Take	17.75
SIMON & SCHUSTER	41.00	Exit K	20.50
JK Lassers Income Tax	46.00	Exit K	20.50
JK Lassers Money Manager	46.00	For Cat	17.75
SORCIM	46.00	Font Mechanic	15.00
Supercalc 3A	98.00	Font Mechanic	15.00
SOFTWORKS PUBLISHING	98.00	Font Mechanic	15.00
PFS: Access	43.50	Font Mechanic	15.00
PFS: File or Graph	68.50	Font Mechanic	15.00
PFS: Report or Write	68.50	Font Mechanic	15.00
PFS: File & Report	72.00	Font Mechanic	15.00
PFS: Workmates	138.50	Font Mechanic	15.00
STATE OF THE ART	14.75	Font Mechanic	15.00
Electric Checkbook	58.00	Font Mechanic	15.00
Cut & Paste	21.50	Font Mechanic	15.00

Personal and company checks allow 3 weeks to clear. For faster delivery, send cashier's check, certified check, or money order. Shipping—Software (\$3.00 minimum). Shipping—Hardware (please call 203-375-3860). COD—Add an additional \$2.00. Alaska, Hawaii, Canada, P.O. APO, and FPO \$5.00 minimum. Foreign orders—\$15.00 minimum and 15% of all orders over \$100. Mastercard and Visa (please include card no. and expiration date). Connecticut residents add 7.5% sales tax. Prices subject to change without notice. All returns must have a return authorization number. Call 203-375-3860 to obtain one before returning goods for replacement. Defective merchandise replaces with same item only. We do not guarantee compatibility. All sales are final. "Comparable advertised price" does not include typographical errors on the part of other vendors or prices that do not reflect higher shipping costs, credit card charges, or membership fees. The \$1 off offer only applies to items where Northeastern's price is not already the lowest. Final judgment remains with the manager on duty.

Connecticut Orders Call (203) 929-8522 IN CANADA 1-800-843-0074

ASTERN

ANY COMPARABLE ADVERTISED PRICE BY \$1

GIROUER

Science Island or Treasure Hun

Easy Graph or Friendly Filer

Educate

HARDEN

Word Challenge

LEARNING COMPANY

Rocky's Boots or Robot Odyssey

Number Shumper or Reader Rabbi

Magic Spells or Word Spinner

Bumble Games or Bumble Plot

Germude's Puzzles or Secrets

Addition Magician

Jungle Rainbow

Mountain Hotel

MAGNUM

Super Speed Reading

MECC

Elementary Series (Each)

Math or Health Series (Each)

MICROSOFT

Typing Tutor II

MILLIKEN

Math Sequences (Each)

Milliken Word Processor

MINDSCAPE

Perfect Score SAT

Keyboard Code

Teacher Profile

SCARBOROUGH SYSTEMS

Build a Book About You

System Computer Diet

MastersType's Writing Wizard

MastersType's Filer and Improved

Run for the Money

Picture Writer

SCHOLASTIC WIZWARE

Fast and Faction Toolkit

Microzone 1-8 (Each)

Story Tree or Story Maker

Turtle Tracks or Agent USA

Operation Frog or Logic Builder

Robot or Kids at Work

SENSIBLE SOFTWARE

Repair Card

SIMON AND SCHUSTER

Chem Lab

Levi's Preparation SAT

Levi's Preparation GMAT

Typing Tutor III

SPINNAKER SOFTWARE

Fraction Fever or Face Maker

File and Report or Spreadsheet

Sniper Tropes 1 or 2

Story Machine or Grandma's Hou

Kindergarten or Kids on Keys

Spankster Word Processor

Alphabet Zoo or Kidwriter

In Search Of

Adventure Creator

Imags

Counting Parade

Sum Blocks

Color Drawing

Homework Helper: Math Problems

Homework Helper: Writing

SPRINGBOARD

Emily Games or Piece of Cake

Make a March or Fraction Factor

Math Parade

Easy As ABC

Mathbusters

Music Master

Rainbow Painter

Puzzle Master

TERRAPIN

Temple Logo

Temple Logo 10 Pack

TIMEWORKS

Evelyn Wood Dynamic Reader

WEEKLY READER

Exploring Tables and Graphs

Sticky Bear Series (Each)

ENTERTAINMENT

ACCOLADE

Searchhead II

Dom Busters

Fight Night

Hardball

Law of the West

PSI #5 Trading Post

Sundog

ACTIVISION

Alcove

After Egg

Master of the Lamps

Great American Road Race

Computer Discworld

Star League Baseball

Countdown to Shutdown

Ghostbusters of Zenith

Mindshadow or Space Shuttle

The Trocer Sanction or Hacker

GAMEMAKER

AVALON HILL

Under Fire

AVANT GUARD

Dave Winfield's Batter Up

Joe Theismann's Football

BANTAM PUBLISHING

Escape or Cave of Time

Fourth Protocol

I'Damiono The Wizard

Sherlock Holmes Another Bow

BLUE CHIP

Millionaire, Baron or Tycoon

Squid

BREROBURG

Captain Goodnight

Championship Iodeunner

Lode Runner or Kurioeka

Mask of the Sun

The Quest or Ring Quest

Xyphus or Transylvania

POLARWARE

Sword of Kodash

RANDOM HOUSE

Alpine Encounter

SEGA

Altronix Reality

Brace Lee or Conon

Orpheus

Zorro or the Goonies

Mr. Do

CBS SOFTWARE

Adventure Construction Set

Archon

Archon II or Skyfox

Autoduel

Bord's Tale or Reach for the Stars

Moebius

Carriers of War

Europe Ablaze

Mus Construction Set

One-On-One

Pinball Construction Set

Seven Cities of Gold

Sierra

Wilderness

Chessmaster 2000

Super Boulder Dash

Skyfox

Lords of Conquest

Ogre

EPTX

Ballblazer

Edon

Fractulus

Summer Games I or II

Temple of Asphat Trilogy

Winter Games

World's Greatest Baseball Game

World's Greatest Football Game

HAYDEN

Sargon III

Computer Novel Const Set

Holy Grail

Question

ROF 1985

Refriger 88 or Kompligruppe

USAFAF

Wor in Russia

Wizord's Crown

SYNAPSE SOFTWARE

Foolbitzky

Wishbringer

Trinity

Deadline: Suspended or Starra

Hitchhiker's Guide to the Galo

Planetfall or Enchanter

Sorcerer, Suspect or Infidel

Witness or Sebstolker

Zark II or Zark III

Crusade in Europe

Decision in the Desert

F-15 Strike Eagle or Solo Flig

Gunship

Silent Service

NATO Commander

Conflict in Vietnam

Acrojet

MICRO LEAGUE SPORTS

Micro League Baseball

Micro League Managers Disk

MINOSCAPE

Crossword Magic

Halley Project

James Bond View to a Kill

Rambo

One Step Software

Golfs Best Prehurst

Golfs Best St Andrews

ORIGIN SYSTEMS

Auto Opt

Moebius

Ultimo III

Ultimo IV

PENGUIN

Frogger 3 Deep or Super Zaxxon

50 Hunter or Buck Rogers

Topper or Star Trek

Spyp Hunter, Topper or Star Trek

Paper Airplane Const. Set

Sierra

King's Quest I or II

The Black Cauldron

Championship Boxing

Cricket IIC

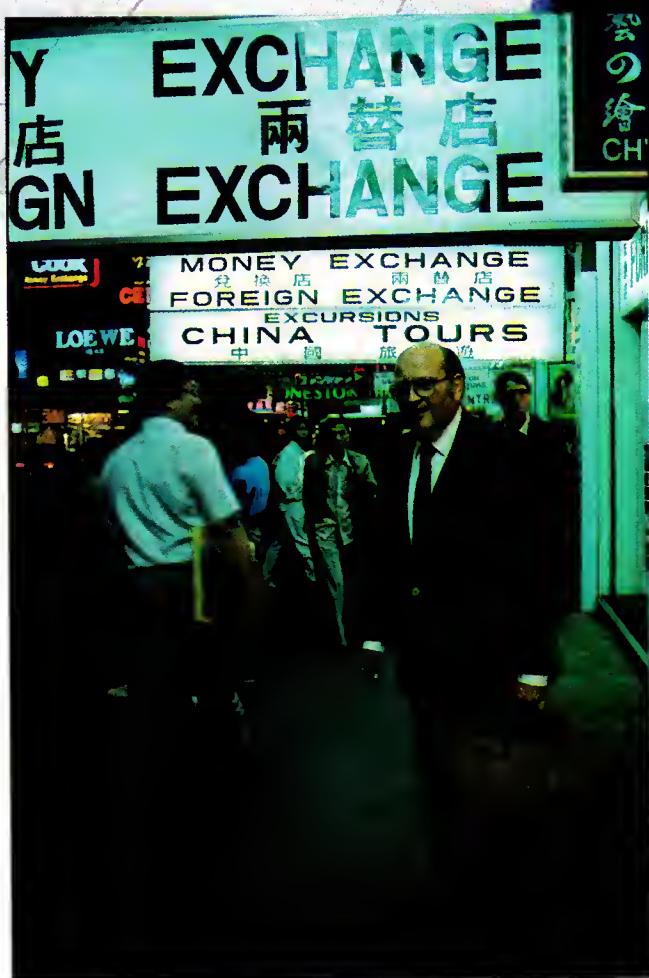
Frogger 3 Deep or Super Zaxxon

50 Hunter or Buck Rogers

Topper or Star Trek

Saturn 128K Ramcard

McGraw-Hill



Planning a trip abroad? Take your Apple //c along for the ride—as Jim Munro discovered, it's rugged, reliable, and very portable.



THE //c FROM HERE TO HONG KONG

by James B. Munro

XINKULE (chin-ku-le)! It's a Chinese greeting to a visitor arriving after a long journey. Roughly translated, it means "thank you for going to so much trouble to visit me." Going to China on business can sometimes be a lot of trouble. As businessman Jim Munro says, "If you can't carry it, don't take it!"—it's a law of survival.

Jim Munro spends much of the year conducting business in China as the international sales manager for a company that installs turnkey factories for manufacturing electronic components. His job tests the concept of portable computers: He squeezes his system into the overhead compartments of airplanes, and travels through the streets of Shanghai and Hong Kong with the computer in the front basket of his bicycle, like a businessman's E.T.

The following is Munro's story of why he chose the Apple //c, and how he went about setting up his system.

China-Bound

I needed a portable computer system with a lot of power. It had to handle word processing of 150-page engineering manuals, 60-page legal contracts, form letters, and other correspondence. It had to manage complex

spreadsheets with hundreds of calculations, and readable printouts without a lot of fuss and bother. It had to be small enough and light enough to carry with a large briefcase and garment bag. Lastly, my boss had to approve the cost of the system.

To meet my needs, both the word-processing and spreadsheet software had to be programmable. I wasn't going to have time for boring, repetitive tasks. Besides, sometimes I'm a klutz. With complex contracts and spreadsheets to draw up, I couldn't afford an error when consolidating or copying data, especially with a client looking over my shoulder.

The Alternatives

I looked at the Radio Shack laptop computers, but they weren't powerful enough, and the software available wasn't up to my standards. I also considered the Data General One and Zenith portables: nice, powerful, good software available. But at a cost of \$6000 by the time they're fully equipped, I just couldn't afford them.

The Answer

An Apple //c is at the heart of the computer system I settled on. I added a memory-expansion card to provide a

total of 640K of RAM. Naturally, I also needed a flat-panel LCD. Computing would require portable, uninterrupted (up to eight hours) power, so I selected a battery pack and carrying case. Since I needed hard copy, I chose a lightweight ink-jet printer.

As for software, I needed a sophisticated word processor and a programmable spreadsheet. I also had several spreadsheet files I wanted to transfer from Lotus 1-2-3 to the Apple, so conversion was a prime consideration, too.

Putting this system together wasn't easy. Several dealers tried to steer me toward an IBM or compatible because my application was business. Despite their advice, I remained convinced that the Apple //c is the most affordable machine for businesspeople who need a heavy-duty portable computer.

With my decision made, it was time for the fun part—finding the individual peripherals I would need to make my //c a truly portable system.

Adding RAM

The spreadsheets I use in the course of my work are long and complex, so I knew the //c's 128K wouldn't be enough memory. I added a MultiRam CX card, which brought the memory up to 640K. The MultiRam CX comes with good software and documentation, and seems to work flawlessly. You should have a fair amount of programming skill to make full use of this RAM card, but Checkmate supplies all the information you need. I even wrote custom STARTUP menu programs based on suggestions in the MultiRam documentation—now my colleagues who have no programming experience can use the card.

A Portable Screen

Like most portable computers on the market, my Apple system has an LCD, black characters on a gray background. I chose a C-Vue flat-panel display. It has a knob for adjusting contrast, and you can tilt the screen itself to achieve the best viewing angle.

The display is the standard 24 lines by 80 columns. It's sharp, provided there's a normal amount of overhead ambient light in the room. When the lighting is right, you may find that your eyes are less tired after a long session with the LCD than with a conventional monitor. It's almost impossible for two people to read the screen together, though, because LCD technology is so dependent on viewing angle.

You can permanently attach a bracket to the Apple //c with adhesive, and the display then snaps into the bracket. I leave the display attached. To reduce the chances of damaging the screen, I added two little self-adhesive rubber "feet" to the face of the panel to act as "shock absorbers" when I fold down the display for travel.

The display connects via a short ribbon cable to the //c monitor port, located behind the computer's handle/stand. Repeated flexing may damage the ribbon cable, so you might think of having someone build you a more durable custom cable when your warranty runs out. In the meantime, if you don't want to use the handle, prop the computer on the external clock to allow air circulation for cooling.

Powering Up

To power the unit, I selected the Prairie Power Pack. Just plug it into a wall outlet, and the battery charges itself or supplies power to run the computer. Each charge lasts about eight hours, and you get a five-minute warning to save your files to disk before the power runs out. The carrying case is attractive and durable.

Portable Printer and Drive

For printing I selected the adequate-but-not-great Epson HS-80 LetterJet, and I have no regrets. It offers quasi-letter-quality type in pica (ten characters per inch), and draft quality elite (12 cpi) and compressed (17 cpi). Speed is 160 characters per second in draft and 32 cps in near-letter-quality.



Which Apple works better?



With new Z-RAM II installed, the Apple on the right works a whole megabyte better!

A little while ago, the owner of the Apple on the right unscrewed its hood. And in a few quick minutes, he turned his IIc into a whole new machine. With the new 1 megabyte Z-RAM II, Applied Engineering's powerful new version of an already awesome expansion card.



*"I recommend
Applied Engineering
products wholeheartedly."*

*Steve Wozniak, the creator
of Apple Computer*

Now his Apple can completely load programs into RAM — and then store, load and run them up to 30 times faster. And our included RAM disk is compatible with Applesoft, PRO-DOS, DOS 3.3, PASCAL and CP/M.

Turbo Charged AppleWorks.

Even a 256K Z-RAM II can completely load AppleWorks into RAM. With Z-RAM II, AppleWorks responds the moment your fingers touch the keyboard. A 256K Z-RAM II lets your IIc run AppleWorks up to 30 times faster, expands the clipboard, and increases available desktop memory to 229K.

Only Z-RAM II increases the maximum number of records from 1,350 to over 15,000. And only Z-RAM II increases the number of lines allowed in the word processor from 2,250 to over 15,000, provides a print spooler, and auto segments large files so they can be saved on two or more disks.

And for those who crave even more power, Z-RAM is available with 512K, 768K or 1 megabyte of main memory!

Welcome to the world of CP/M.

But perhaps the best news is that Z-RAM II has a built-in high speed Z-80B microprocessor that allows you to run CP/M programs. Which means you now have access to the single largest body of software in existence, including popular packages like WordStar, dBase II, Turbo PASCAL and Microsoft BASIC.

Z-RAM II is compatible with all IIc software and hardware, installs easily in just ten minutes with only a screwdriver, is available with memory upgrades up to 1 MEG that can be user-installed at any time. Z-RAM II is easily handled by the IIc power supply with our patent pending power saving design. In fact, a 1 megabyte Z-RAM II draws less power than a 512K Z-RAM.

For fast response.

Z-RAM II comes complete with simple instructions, RAM disk software, Z-80 operating system, CP/M manual, and a five-year "hassle free" warranty.

Make your Apple — and AppleWorks — work better. With 256K Z-RAM II (\$329), 512K (\$389), 768K (\$449), 1 MEG (\$599).

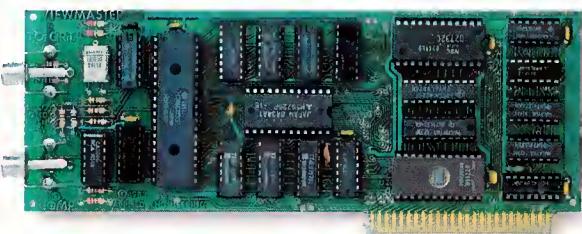
If you want to run CP/M software, but don't need more memory, we suggest our Z-80c card. The Z-80c has no memory expansion ports and is priced at only \$159.

Call 214-241-6060 TO ORDER TODAY. 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5 1/2% sales tax. Add \$10.00 outside U.S.

AE Applied Engineering
The Apple enhancement experts.

P. O. Box 798, Carrollton, TX 75006, (214) 241-6060

Now run AppleWorks™ on your II+ and keep full 80 column compatibility!



	BUILT-IN SOFTSWITCH	SHIFT KEY SUPPORT	LOW POWER DESIGN	80 COLUMN HOME	7 x 3 DOT MATRIX	LIGHT PEN INPUTS	60 COLUMN OVERPRINT	INVERSE CHARACTERS
VIEWMASTER 80	✓	✓	✓	✓	✓	✓	✓	✓
SUPRTERM		✓				✓	✓	
WIZARD 80				✓		✓	✓	
VISION 80	✓	✓		✓				
OMNIVISION		✓				✓	✓	
VIEWMAX 80	✓	✓		✓			✓	
SMARTERM	✓	✓			✓	✓		
VIDEOTERM		✓	✓	✓	✓		✓	

One look at the chart will give you some of the reasons there's only one smart choice in 80 column cards for your Apple. But the real secret to Viewmaster 80's success is something even better: Total compatibility.

Each Viewmaster 80 includes our powerful AppleWorks expand software, allowing AppleWorks to run on the II+ with only 64K (or more) memory. (We recommend the RamFactor memory card, but any compatible Apple memory card will work.) The software provides our full range of AppleWorks enhancements, including expanded records, word processor, multi-disk saving, time and date display on screen with any PRO-DOS clock, and more!

The Viewmaster 80 works with all 80 column applications, including DOS 3.3, PRO-DOS, CP/M, Pascal, WordStar, Format II, Applewriter II, dBase II, Visicalc, Multiplan, and *hundreds* of others—including AppleWorks.

Here are just a few of the powerful features the Viewmaster 80 delivers for a great price (\$139):

- 80 Characters by 24 lines
- Fully compatible with all Apple languages and software
- Highest compatibility with existing 80 column software
- Very low power consumption
- High speed (18 MHZ) scroll rate
- Upper and lower case characters and true descenders, both inverse and normal; all on-screen editing functions are supported
- User-definable cursor shape
- Compatible with Apple II, II+ and IIE
- Five-year warranty

Call today to order or for more information, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 5 1/2% sales tax. Add \$10.00 outside U.S.A.

AE Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

The LetterJet includes almost all the usual Epson printer commands, such as super/subscript, italics, boldface, and double-strike. It handles cut sheets or rolls of paper. Use glazed or nonporous paper for clearest print: The ink tends to "wick" on coated stock, such as that used in photocopiers.

In its sales brochure, Epson also claims to offer an optional cut-sheet feeder, but an Epson dealer couldn't show me one. The printer uses friction feed only; it can't handle continuous-form paper, as the carriage isn't wide enough.

Rechargeable nickel-cadmium batteries and a wall-plug charger are built in.

Epson advertises the HS-80 as being available in both parallel and serial versions, but I spent fruitless hours on the telephone with Epson distributors trying to locate a serial model. Using the HS-80 with the Apple IIc requires an interface between the computer's serial port and the printer's parallel port. I selected the Grappler C serial-to-parallel interface. The molded-plastic Grappler converter attaches to the parallel port of the printer, and the plug on the other end fits into the IIc serial printer port. The particular unit I bought wouldn't stay connected on the parallel end unless the clips on the printer were in place. Some selective exacto-knife work bailed me out.

One problem in my application is that the converter box requires power—nine volts DC, according to the manufacturer's specifications. I bought a package of 9V battery clips and a suitably sized coaxial power plug from Radio Shack. Solder the red wire from one of the clips to the center post of the power plug, and the black wire to the outside post. Attach a 9V alkaline battery, and voilà, you're portable again. If you really want to avoid this inconvenience, you might want to consider a portable typewriter with an RS-232 interface.

An external drive is necessary for copying disks; you'll also need one if you use SuperCalc3a Graph, as this module is very disk-intensive. The Pico External Disk Drive is a rugged half-height 5 1/4-inch unit. I don't trust ribbon cable for portable applications, though, so I had a special cable made and added a plug to the drive to make storage a little easier.

Number Crunching

SuperCalc3a is an excellent spreadsheet, and the data-base and graphing features look good, too (even though I don't have applications for them yet). The package contains excellent documentation and utility software, including Sideways, a printing utility.

In fact, for my use SuperCalc3a beats Lotus 1-2-3 in terms of the speed with which you can copy and replicate. SuperCalc3a also lets you set column widths to zero, and includes a HIDE/DISPLAY command. You can have your cake and eat it, too: The display and printer both ignore any data (or hidden data) with widths set to zero.

One way to use these features is to print wide spreadsheets a piece at a time. For example, say that column A contains row labels; print A through J as usual. Now set columns B through J to zero width. You can then print A through T, but the printer will ignore the data in columns B through J. Another application is to put all of the formulas and data for cost and profit information in hidden columns; use the same spreadsheet on which you're calculating a price quotation in full view of your client. Afterward, in privacy, you can reverse the process, and the program will have calculated all the costs and profits.

You can preprogram all of these operations with the SuperCalc3a /X command, which execs Apple text files.



Writing these text files, or macros, is easy: Just type quotation marks ("") as the first entry, then press each key in sequence as you would normally to execute a series of commands from the keyboard. Then "output" to disk (save as a text file) the range containing the macro. Since they're ordinary text files, you can edit them with Apple Writer—handy if you want to insert fancy control-code commands.

SuperCalc3a supports the MultiRam CX card, but in an odd way. The additional memory is available for program use, but the spreadsheet doesn't get any wider (66 columns) or longer (240 rows), just more powerful. To add to your aggravation, SuperCalc3a grabs the first 512K it finds (that's all the memory on the CX board), thereby not leaving you the option of using some of it as a RAM disk. The RAM disk would be handy, and even my most complex spreadsheet, which fills the available screen, still leaves about 300K unused.

Perhaps SuperCalc3a's weakest aspect is the way it handles printing ("output to printer"). SuperCalc3a provides minimal default settings for such basics as page size, but not for margins, perforations, and other options you probably want to control. You can manage these functions with printer commands, but you have to know what you're doing (see "The Docile Printer," p. 75 in the February 1985 *inCider*).

Converting from Lotus

Since I'd already written my spreadsheets with Lotus 1-2-3, I wanted to transfer them to SuperCalc3a on the Apple //c. You must first use a Lotus macro to automatically convert every cell to a literal: Put quotation marks ("") before every formula. Then use the Lotus Translate program to convert the file to DIF format. Now, with a Quadram Quadlink (Apple card) in your IBM XT, convert the DIF file to an Apple DOS 3.3 DIF file. Then convert to ProDOS with the appropriate utility from the Apple ProDOS User's Disk.

Now use the SuperData Interchange Utility that comes with SuperCalc3a to convert your file to the new spreadsheet. Lastly, adjust the column widths to match the original and remove the quotation marks. You have to do a little cleaning up, such as removing the @ symbols (as in @SUM), because SuperCalc3a doesn't use them. It's a lot of work, but it beats the heck out of rewriting and debugging.

Producing Documents

Apple Writer II is, in my opinion, simply the best professional word processor on the market for any computer

Timemaster H.O.TM, the only clock that displays time and date on AppleWorksTM screens and files.



Now, get all the features of all the competition combined!

It's the smart way to put the time and date on your Apple II+® or IIe®. Because only the Timemaster H.O. packs *ALL* the features of all the competition *combined*, including leap year, year (not just in PRO-DOS), month, date, day of week, hours, minutes, seconds and milliseconds. It's totally PRO-DOS, DOS 3.3, PASCAL and CP/M compatible. And of course, it works better than any other clock with AppleWorks.

If you're using or writing software for other clock cards, you're still covered. Because the H.O. will *automatically* emulate them. And the Timemaster H.O. adds 14 new commands to BASIC. The H.O. even comes complete with two disks full of sample programs, including a computerized appointment book, a DOS dating program, interrupt programs, and over 30 programs that others charge extra for—or don't even offer.

As a low-cost option, you can add true BSR remote control to the H.O., giving you remote control of up to 16 lights and appliances in your home or office.

- Fully PRO-DOS and DOS 3.3, CP/M and PASCAL compatible
- Time in hours, minutes, seconds and milliseconds (the ONLY PRO-DOS compatible card with millisecond capability); date with year, month, day of week and leap year
- 24-Hour military format or 12-hour AM/PM format
- Eight software controlled interrupts so you can run two programs at the same time (many examples included)
- Can be set to the second
- Allows AppleWorks to time and date stamp all data automatically
- The only clock card that displays time and date on the AppleWorks screen
- Five-year warranty

Clock price	\$129.00
BSR option (may be added later)	\$ 49.00

Call to order today, 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering, MasterCard, VISA and C.O.D. welcome. Texas residents add 5 1/2% sales tax. Add \$10.00 outside U.S.A.

AE Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

Your Apple IIc deserves the time of day.



Our IIc System Clock offers automatic time and date stamping, puts time, year, month, date and day of week right on your screen!

Applied Engineering's revolutionary IIc System Clock plugs into either your modem or printer serial port ... and displays the time and date right on the AppleWorks screen. The time feature includes hours, minutes and seconds, and the date includes year, month, date and day of week.

All your work is *automatically* time and date stamped to give you a complete record of your work history. And since it's from Applied Engineering, you'll get our famous no-hassle five year warranty and a price that will persuade you.

FOR JUST \$79, you can give your IIc the time of day, plus much more.

- Fully PRO-DOS compatible
- Automatic time and date stamping
- Easy to use from BASIC
- Date includes year, month, date and day of week
- Time includes hours, minutes, seconds
- Time and date stamps AppleWorks files
- Auto-access from AppleWorks database
- No-hassle five year warranty

Call 214-241-6060 TO ORDER TODAY 9 a.m. to 11 p.m. seven days, or send check or money order to Applied Engineering. MasterCard, Visa and C.O.D. welcome. Texas residents add 5 1/8% sales tax. Add \$10.00 outside U.S.A.

AE Applied Engineering
P.O. Box 798, Carrollton, TX 75006
(214) 241-6060

system. Its built-in Word Processing Language makes it programmable, and several cottage vendors (including the author) offer WPL programs if you don't want to do it yourself.

I modified my own software, WPL.AUTO (an Apple Writer enhancement), for use with my MultiRam RAM disk. This software consists of a series of WPL programs that automate file handling, letter merging, mail-list management, and related tasks. It also includes one-key printer-command glossaries for a number of best-selling printers.

You can further enhance your word processing with a good spelling checker. I recommend Sensible Speller—I've purchased probably six versions of this program over the years, and they just keep getting better. For serious writing, a full dictionary is included in two parts of 40,000 words each. Sensible Speller also lets you add an unlimited number of your own terms (technical jargon, for instance). For fastest spell checking of long documents, put the Speller module, dictionaries, and your document all on RAM disk.

Conclusion

I'm certain I'll modify my system as I gain more field experience with it. For the moment, though, I'm delighted with the results. From San Francisco to Narita, Japan, to Shanghai, China, this Apple IIc system has been the most compact, dependable traveling companion I could ask for. ■

Write to James Munro at Box 205, Youngstown, NY 14174.

Product Information

Apple Writer II

Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
\$149

Reader Service Number 303

Pico External Disk Drive

Pico Products
Division of Wayne Green Enterprises
Route 202 North
Peterborough, NH 03458
(603) 924-9261
\$189.95

Reader Service Number 307

C-Vue

SWI International Systems
East Gray Road
Suite 2
Scottsdale, AZ 85260
(602) 946-8230
\$525

Reader Service Number 304

Prairie Power Pack

Prairie Power Systems
15500 Wayzata Boulevard
Suite 768
Wayzata, MN 55391
(612) 475-1945
\$269.95

Reader Service Number 308

HS-80 LetterJet

Epson America
2800 Lomita Boulevard
Torrance, CA 90505
(213) 539-9140
\$499

Reader Service Number 305

Sensible Speller

Sensible Software
210 South Woodward
Suite 229
Birmingham, MI 48011
(313) 258-5566
\$125

Reader Service Number 309

MultiRam CX

Checkmate Technology
509 South Rockford Drive
Tempe, AZ 85281
(602) 966-5802
\$199.95 (256K),
\$259.95 (512K)

Reader Service Number 306

SuperCalc3a

Sorcim/IUS
215 Fortune Drive
San Jose, CA 95131
(408) 942-1727
\$195

Reader Service Number 310

VIP Professional™

The New Generation Spreadsheet
For the New Generation Apple® //e & //c

There's an all new Apple //, an Apple // with almost unlimited memory and almost unlimited power—even a new sixteen-bit CPU.* And a *REAL* Macintosh-style interface is no longer just a dream. It's a mouse click away!

VIP Professional is an all-new program made possible by the new //, and designed specifically for it. Professional brings to the Apple // the most popular, most powerful spreadsheet for any computer—Lotus 1-2-3™ version 1A. But to the integrated spreadsheet, database and graphics of 1-2-3, Professional adds a full-blown Mac-style interface.

Beyond Lotus Compatibility

VIP Professional not only has the same commands and features as 1-2-3, you can also type the same keys to do the same things. Lotus files can be read and written, and all functions can be used, including the powerful macros.

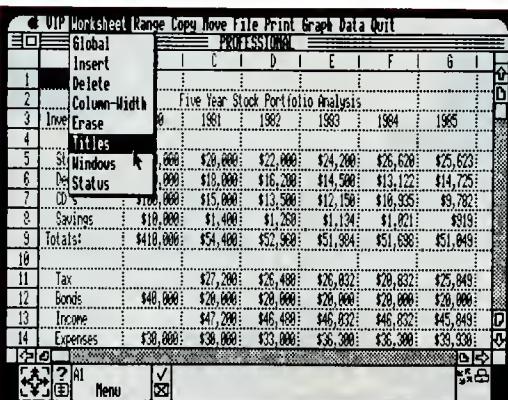
But Professional goes beyond Lotus, making it oh so easy to use—and even more powerful. Pull-down menus, dialogue boxes, mouse ranging, scads of icons, scroll bars, column "grabbers", grids—everything you need for ease of use, everything Lotus lacks. Plus, Professional adds things that were left out of Lotus, like a giant 8,192 row by 256 column spreadsheet, and the ability to use up to four megabytes of memory.

No Other Spreadsheet Compares

Feature	VIP	SuperCalc 3a	Mouse Calc	AppleWorks
Sheet Size	256x8192	63x256	63x254	153x999
Usable Memory	4 Meg	500K	42K	61K
Lotus Spreadsheet	Yes	No	No	No
Lotus Database	Yes	No	No	No
Lotus Graphs	Yes	No	No	No
Lotus Macros	Yes	No	No	No
Uses Lotus Files	Yes	No	No	No
Uses Mouse	Yes	No	Yes	No
Uses Icons	Yes	No	No	No
Math Functions	51	49	24	13
Fast Natural Recalc	Yes	No	No	No
Speed	Fast	Fast	Slow	Fast
Supports 16-Bit*	Yes	No	No	No

*Works with but does not require Checkmate and Applied Engineering 16-bit boards.

VIP Professional is a trademark of VIP Technologies Corp.; Apple is a registered trademark of Apple Computer, Inc.; Macintosh is a trademark of McIntosh Laboratory, Inc. used with express permission; AppleWorks, PRODOS, and Expanded Memory Card are trademarks of Apple Computer, Inc.; SuperCalc3 is a trademark of Scrumpt/US; Mouse Calc is a trademark of Version Soft; Lotus and 1-2-3 are trademarks of Lotus Development Corp.; RamWorkIII, Z-RAM and TransWarp are trademarks of Applied Engineering; SpinDisk is a trademark of AST Research, Inc.; MultiRam is a trademark of Checkmate Technology. Copyright © 1985 VIP Technologies Corporation.



Professional Power

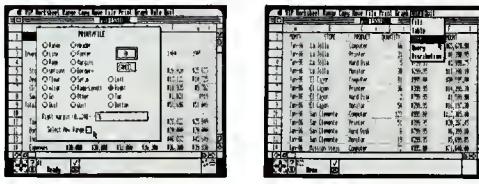
Don't be fooled by the pretty face. Professional packs a tremendous punch. Like its ability to address up to four megabytes of data; Or its 50-plus built-in financial and mathematical functions; Or its database with up to 8,192 records, each with up to 256 fields; Or its five different types of graphs with tens of options; And its Lotus 1-2-3 macro programming language that

lets you automate your spreadsheet for specific tasks such as classroom exercises, experiments, or business applications such as accounting.

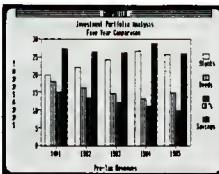
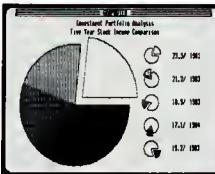
Of course you get variable column width, split screens, frozen titles, sorting, data query, file combine and extract, copy, move, range naming, justification for doing business form letters, statistical analysis, a full range of numerical formatting, engineering graphics precision, local and global protection of cells, header and footer control. In short, Professional matches the power of any spreadsheet for any computer!

Just Minutes to Learn

Professional comes with a user-sensitive tutorial for the newcomer. And help is built right into the program. With the handy tutorial you will be able to create your first worksheets in just minutes.



Do your finances, keep your inventory, graph your sales and a whole lot more.



VIP Technologies Corp. (805) 968-9567
132 Aero Camino, Santa Barbara, CA 93117

Get the Power of 1-2-3 for only

 **\$249.95** 

The MasterCard logo is a black rectangular box with the word "MasterCard" written in a white, serif font.

If Your Dealer is Out of Stock, Order Direct

Send your check or money order, together with \$3 for shipping and handling. CA residents add 6% sales tax. Orders by personal check are held for three weeks for the check to clear. COD's and purchase orders not accepted. All prices subject to change without notice.

SYSTEM REQUIREMENTS: Enhanced Apple IIe or IIc with at least 256K; Uses ProDOS; Can be used with popular hard disks; Works with MultiRam, RamWorks II & Z-RAM; Apple Memory Expansion Card and AST SprintDisk only work if other memory card added; Mouse and second drive recommended; Double hi-res required; Color monitor required for color features; Uses 16-bit boards with 65C816; Compatible with TransWarp speedup card; To be used, Lotus .WKS files must be transferred to ProDOS diskettes with a communications program.

TWO ROADS TO MEMORY EXPANSION

by Paul Statt, *inCider* Technical Editor

If you're thinking of expanding the memory in your Apple II, ask yourself, will the software I like work with the memory-expansion card I want? The Apple world encompasses two standard ways of adding RAM—auxiliary-slot memory, popularized by Applied Engineering's RamWorks II card, and peripheral-slot memory, Apple's own protocol. If you're an AppleWorks fan, you're in luck: AppleWorks 1.3 recognizes Apple's peripheral-slot Apple II Memory Expansion board without patching, and Applied Engineering's Desktop Expander software loads AppleWorks automatically into RAM.

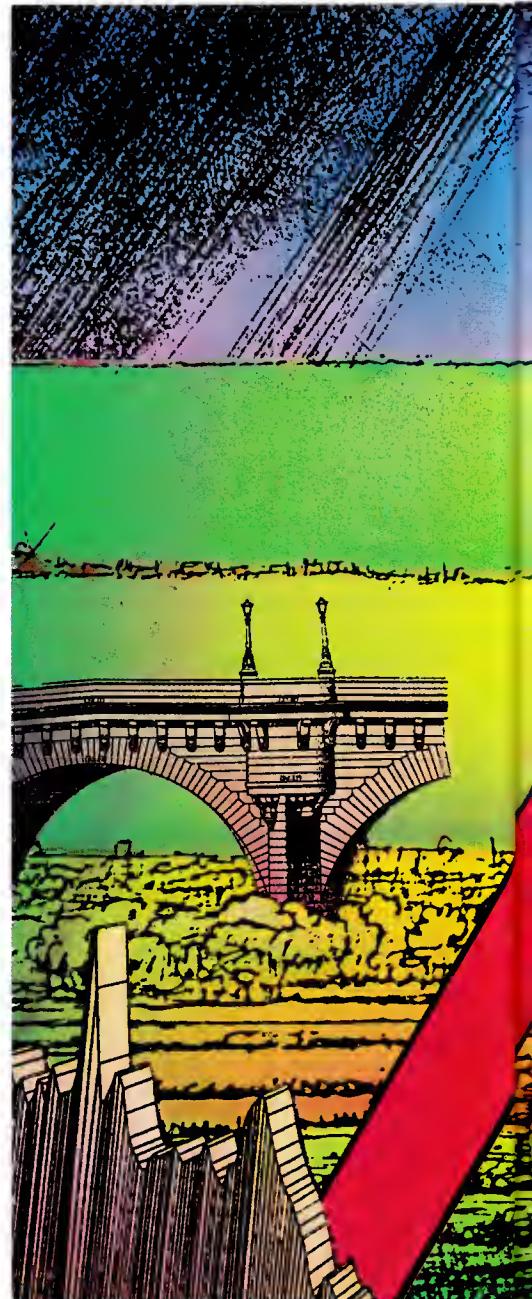
That's the hope of a standard for memory expansion: that *all* memory-intensive software will recognize the peripheral-slot expanded memory of Apple's expected new machine, the "IIx," without patches. As technologically advanced as the Applied Engineering, Checkmate, AST, and Legend RAM boards are, you need memory-expansion software to make them work. And AppleWorks and its accessories (Pinpoint, MegaWorks, and such) are just about the only packages that can take full advantage of auxiliary-slot memory. An auxiliary-slot memory-expansion board is an essential part of my system—but it turns my Apple //e not into a 512K computer, but a 512K AppleWorks machine.

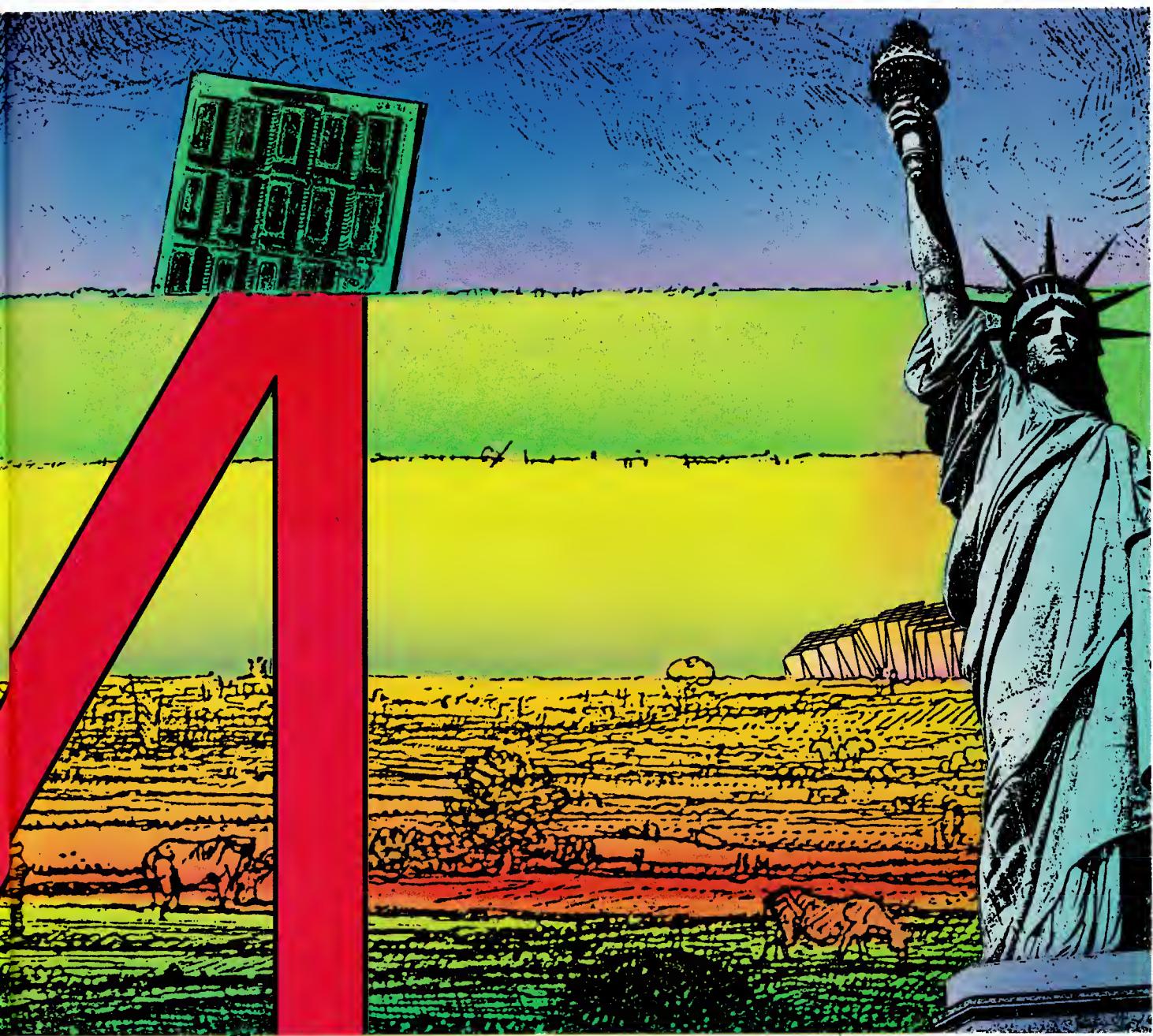
Software Compatibility

The rest of your programs probably use any auxiliary-slot memory in your machine as a RAM disk, not directly. Much software currently compatible with the peripheral-slot standard also accesses the Apple card's memory only as a RAM disk. You get one very fast disk drive, but never actually load these programs into RAM. (See Peter Baum's accompanying sidebar for a discussion of RAM-disk technology.)

For instance, Manzanita Software's BusinessWorks package uses a RAM disk—it makes no difference whether you favor Apple's memory expansion, Applied's, or Checkmate's. The MegaHaus series of AppleWorks extras also utilize either a peripheral or auxiliary RAM disk, as do MouseWrite from Roger Wagner Publishing and International Solutions' Mouse Desk.

WordPerfect from Satellite Software International also uses extra memory as a RAM disk and supports both auxiliary- and peripheral-slot cards. If you don't know how to use a RAM disk, or are reluctant to go through a complicated booting process, SSI offers a preboot disk for Apple, AST, Checkmate, and Legend memory-expansion cards; it configures WordPerfect to look for the RAM disk in your computer's extra memory.

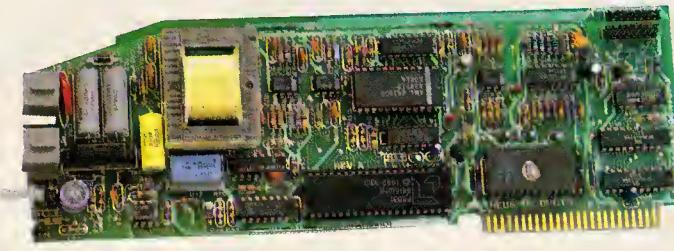




Auxiliary-slot vs. the new peripheral-slot protocol: Which type of memory-expansion card is right for your Apple? The answer depends on your software needs.

The Apple II... **HOT-LINE**

A Plug-In 1200/300 Baud Single Card Intelligent Modem For Your Apple II... Just \$295 Including Software



ProModem 1200A is a 1200/300 baud Hayes compatible auto-dial modem card that plugs directly into any expansion slot in the Apple II, II+ or IIe. All you have to do is plug it in and connect the telephone cord.

Ours is the only 1200 baud modem to seriously consider for your Apple II. At just \$295, it's priced well below its nearest competitor, yet it does much more. No longer do you have to buy an external modem, a serial card, an RS232C cable and communications software which, combined, would cost you hundreds of dollars more. There's really no comparison.

ProModem 1200A is provided with convenient on-board communications software in ROM. For more advanced applications, disk based ProCom-A communications and word processing software is included. Automatic logon macro sequences are accessed from the directory by one keystroke to provide easy connection to databases such as The Source, Dow Jones, and the Electronic Airline Guide.

Features include: Auto-dial/Auto-answer, tone and pulse dial, help commands, built-in diagnostics, two phone jacks, line status detect with redial on busy, full and half duplex, and speaker with volume control.

You just can't lose when our plug-in ProModem 1200A comes ready to use, with on-board software, easy to understand documentation and a telephone cord — all for just \$295.

Menu-Driven Terminal Program

- 1200A TERMINAL DRIVER
© PROMETHEUS PRODUCTS INC.
- 1) COMMUNICATIONS
2) FILE TRANSFER
3) OPTIONS
USE ESC TO EXIT
ENTER SELECTION
- 1) BAUD RATE 1200 300
2) DATA BITS 8 7
3) PARITY NONE ODD EVEN MARK SPACE
USE ESC TO EXIT
ENTER SELECTION
- 1) TYPE XMODEM LINE
2) DIRECTION SEND RECEIVE
3) FILE NAME
USE ESC TO EXIT
ENTER SELECTION
- 1) PRINTER ON OFF
2) CLOCK ON OFF
3) STATUS LINE ON OFF
4) KEYBOARD ON OFF
5) CAP LOCK ON OFF
6) ECHO ON OFF
7) LF AFTER CR ON OFF
USE ESC TO EXIT
ENTER SELECTION

The Hot Line

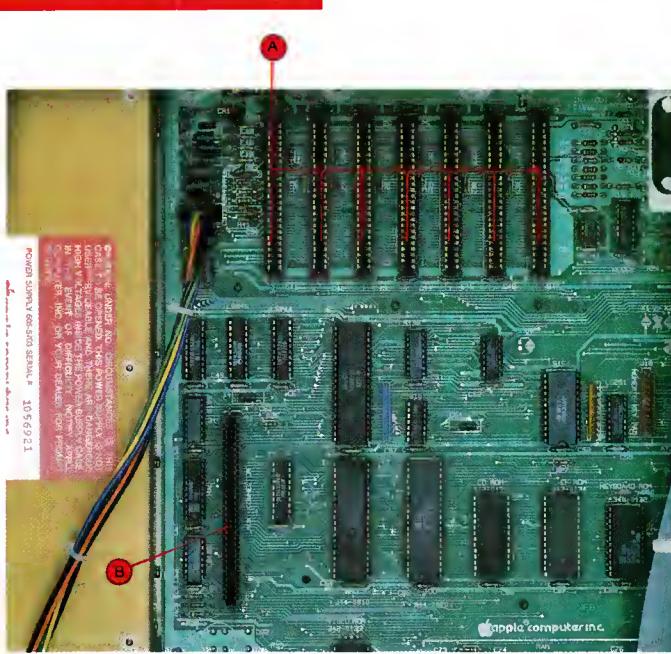


PROMETHEUS
PRODUCTS • INC.

4545 Cushing Parkway • Fremont, California 94538

Circle 268 on Reader Service Card.

Call Now For
Complete Info...
415/490-2370



Boards supporting the newer of the two standards for Apple memory expansion take up one of the Apple's seven peripheral slots (see "A"). Boards that follow the other standard, popularized by the Applied Engineering Ram-Works II card, plug into the Apple's auxiliary slot (see "B").

On the other hand, SuperCalc3a can directly use up to 512K of the Apple memory-expansion card—enough to fill every blank on the spreadsheet. Computer Associates reports difficulty making it work with the Applied and Checkmate boards, though: The problem is the different bank-switching scheme.

Quark's Catalyst program selector and International Solutions' Mouse Calc also support only the Apple card and can use its memory directly or as a RAM disk.

AppleWorks version 1.3 allows expansion of the AppleWorks desktop to 1012K with the Apple card, and can also use the extra memory as a RAM disk. Each auxiliary-memory-card maker, though, must supply its own patch program to expand the AppleWorks desktop.

AppleWorks modified for auxiliary-memory cards is quite different from AppleWorks 1.3. (See Peter Baum's sidebar, "Bank-Switched Memory," for an explanation of the two techniques involved.) For example, Applied Engineering's Desktop Expander program extends the data base to more than 15,000 records and the word processor to more than 15,000 lines, while AppleWorks 1.3 supports only 1350 records and 2250 lines.

On the other hand, a 256K Apple II Memory Expansion card can store approximately 20 percent more data than a 256K RamWorks card. AppleWorks 1.3 allocates more of the expansion memory to the desktop, so if both cards have the same amount of memory, 20 percent more data can be squeezed onto the 1.3 desktop with the peripheral-slot card (assuming that the line or record limits aren't encountered).

RamWorks' Desktop Expander creates a printer buffer with this extra memory not taken by the desktop. It also keeps the time and date on screen if you have a clock card. You can load the entire AppleWorks program into memory during startup with the expander utility.

AppleWorks runs at about the same speed with either the auxiliary or peripheral setup. (Figures quoted are based on tests done by Peter Baum, of Apple Computer's Developer Technical Support Apple II Group, in March 1986, but we caution potential buyers to check with dealers or manufacturers for recent changes in prices.)

THE SEIKO[®] DATAGRAPH 2001 From Computer To Wrist In 7 Seconds!



**2K RAM, 2K ROM,
40 Character
Display, Microprocessor, Power
Supply & Modem ON YOUR WRIST!**

Seiko's new Datagraph 2001 is the ultimate organizational tool—a microprocessor driven timepiece that lets you take computer generated information anywhere you go. With a 2K RAM memory that stores any portion of your schedule or notes. An easy to read LCD, four line display that displays at the touch of a button. And a wrist alarm that sounds when something important is scheduled.

**A COMPLETE HARDWARE/SOFTWARE SYSTEM,
FOR ALL APPLE[®] II COMPUTERS!**

Time-Trax Software

Powerful, easy-to-use, menu-driven program for scheduling important dates and events. Schedule 23 months on a disk, 99 events/day, get advance notice from 15 min. to 14 days in advance, print out schedules and load data into wrist terminal!

SEIKO Wrist Terminal

A microprocessor driven, full function watch (time, date, alarm & chronograph) and computer terminal with 2K RAM in one package.

ProDOS[™] Clock & Interface

A unique wireless interface transfers data into the watch in only 7 seconds! The built in ProDOS clock can be used with ALL ProDOS software for time & date stamping. Displays the time & date on Appleworks[™] main menu, too!

BUSY PEOPLE EVERYWHERE need the Seiko Datagraph 2001. Never again will you miss an important appointment, meeting, birthday or dinner date. On the road carry your schedule, directions and phone numbers. Use it to remind you of bills to pay or medications to take.

Put it all together, and you have a system that makes every other electronic scheduler obsolete. It's an extraordinary new kind of computer peripheral.

ONLY **\$189.95** COMPLETE ORDER TODAY!
Introductory Offer



Creative Peripherals Unlimited, Inc.

22952 Alcalde #160,
Laguna Hills, CA 92653

800-228-1165 • CA 714-770-3334

Seiko and Apple are registered trademarks of Seiko Corporation of America and Apple Computer, Inc. respectively. ProDOS and AppleWorks are trademarks of Apple Computer, Inc. Time-Trax is a trademark of Creative Peripherals Unlimited, Inc.

★ APPLE ★ MONITOR



RETAIL \$299.00

NOW

\$99

FULL
COLOR

FREE TRIAL PERIOD

MODEM

RETAIL \$349.00

\$98



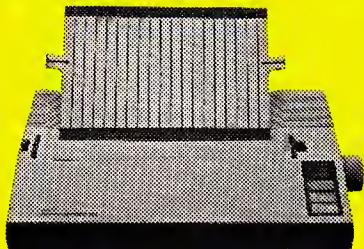
1200 BAUD

PRINTER

EPSON

RETAIL \$349.00

\$149



NEAR LETTER QUALITY

RADAR DETECTOR



\$88



PRO-TECH-TRONICS
6870 Shingle Crk. Pkwy
#103
Minneapolis, MN 55430

QUICK DELIVERY
1-800-345-5080

Circle 32 on Reader Service Card.

One advantage of auxiliary-memory cards is that they don't take up an extra slot in your machine: They substitute for the Extended 80-Column Card. This leaves other slots open for disk drives, printers, a mouse, a modem, or other peripherals. With Apple's peripheral-slot memory board, you'll still need an 80-column board.

Auxiliary-slot memory cards sometimes include features not present on Apple's peripheral-slot memory card: 16-bit and RGB options. Sixteen-bit coprocessors are products created with an eye to the future—that is, Apple's forthcoming 16-bit II. No software sold today benefits from a 16-bit Apple coprocessor, though. With the RGB option, you can use that type of monitor without buying another special card.

You can expand either type of card to 3 megabytes—peripheral-slot cards by filling three slots with 1-megabyte cards, auxiliary-slot cards by "piggybacking" cards onto the first one.

A Bigger Tank

Keep this distinction in mind: If storing a large number of records is more important to you than having a big program in RAM, you need a hard disk (around 10,000,000 bytes of storage) or a compact 3½-inch disk drive (about 800,000 bytes per disk), not a RAM card. If it's speed you're after, you need an accelerator card that forces the 6502 to work faster.

Peter Baum has said that expecting a memory-expansion board to speed up your microprocessor or store more records is a little like expecting a bigger gas tank to make your car drive faster and seat six more adults. The larger gas tank means you stop for gas less often; expanded memory for the Apple II means your programs go to the disk less often. Remember that no RAM-expansion scheme can increase the size of your storage space or accelerate your microprocessor. ■

Bank-Switched Memory

Bank switching squeezes more memory out of less computer. It's a trick common to all kinds of Apple II memory expansion: Apple's 128K Extended 80-Column Card, RamWorks II, Apple's Apple II Memory Expansion card, MultiRam //e, SprintDisk, MegaRam Plus, and all the rest.

A microprocessor accesses data and programs from memory by referring to the "location" in which each character is stored. It's like sending mail to an address, and in computerese, the location is actually called the *address*. Each address must be unique in the same way your mailing address must be unique. If not, you'll get somebody else's mail.

The 6502 microprocessor in the Apple II can reach 65,536 (64K) addresses at a time. It can use more than 64K, but only 64K at one time. If it needs to read data outside this 64K address space, called a *bank*, it must switch in the appropriate bank of memory before reading the data.

A very common use of bank switching in everyday life is the phone system. If you dial seven digits, you get a phone in your local area code that responds to that number. But if you dial ten digits, you'll get another phone in a different area code. For example, you can get Information anywhere by dialing 555-1212 preceded by the appropriate area code. The area code does the bank switching.

Product Information

Apple II Memory Expansion, \$299
AppleWorks 1.3, \$250
Extended 80-Column Card, \$100
Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
(see our review of the II Memory Expansion board in this issue, p. 54)

Reader Service Number 311

E' Card
Legend Industries
2220 Scott Lake Road
Pontiac, MI 48054
(313) 674-0953
\$299 (64K)-\$769 (1M)
(see our review in the December 1985 issue, p. 18)

Reader Service Number 312

Flipster
Cirtech
Greengate Productions (U.S.)
2041 Pioneer Court #15
San Mateo, CA 94403
(415) 345-3064
\$399
(see our review in the June 1986 issue, p. 29)

Reader Service Number 313

MegaRam Plus, \$195
(64K)-\$745 (1M)
SprintDisk, \$295
(256K)-\$745 (1M)
AST Research
2121 Alton Avenue
Irvine, CA 92714
(714) 863-1333
(see our review of the SprintDisk in this issue, p. 54)

Reader Service Number 314

MultiRam //e
Checkmate Technology
509 South Rockford Drive
Tempe, AZ 85281
(602) 966-5802
\$159.95 (64K)-\$429.95
(768K)
(see our review of MultiRam RGB-\$199.95 with 64K, \$439.95 with 1M-in this issue, p. 54)

Reader Service Number 315

RamWorks II
Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 241-6060
\$179 (64K)-\$1699 (3M)
(see our review in this issue, p. 54)

Reader Service Number 316

RAM-Disk Storage

Your favorite program may not fully recognize any memory-expansion card, but it may still be able to utilize the extra memory in one way: RAM-card manufacturers provide utility programs that let your computer treat the additional memory as a RAM disk.

A RAM disk is a "phantom" disk drive—to an operating system such as ProDOS, it looks like a physical drive. You can write and read files on a RAM disk just as you would on a 5½-inch floppy drive. For example, ProDOS' BASIC.SYSTEM automatically configures the extra 64K of memory on Apple's Extended 80-Column Card as a 60K RAM disk. (The missing 4K stores the program that makes the memory a RAM disk.)

To watch a RAM disk in action, copy some parts of ProDOS to the 80-column-card ProDOS RAM disk with the help of a file-utility program such as the ProDOS Filer. For example, copy either FILER or BASIC.SYSTEM to /RAM, then run the program (from the FILER, choose QUIT and type /RAM/filename). Notice how quickly the new program leaps onto the screen.

Be careful using the built-in ProDOS RAM disk (/RAM) on the Extended 80-Column Card. Programs that utilize more than 64K, such as AppleWorks, will clobber the RAM disk while running and destroy data and files.

RAM disks speed up file reading and writing. But they don't store data permanently—turn off the computer and the data disappear. Saving to a RAM disk isn't the same thing as saving to your physical disk; if the power fails or the system crashes, your data will be erased beyond recovery. But RAM disks are particularly useful for holding programs, since they're already stored permanently on physical disks—and a single RAM disk is spacious enough to contain several programs. □

—Peter Baum

Auxiliary-Slot Protocol

Cards that plug into your Apple's auxiliary-memory slot mimic the design of the extra 64K you can add to the Apple //e with the Extended 80-Column Card. Apple developed a protocol for accessing this extra 64K, and most popular programs today follow it. To make software development as easy as possible, Applied Engineering and other developers designed their cards to conform to the original Apple standard instead of trying to invent a new convention.

The memory in the auxiliary cards is broken into multiple 64K banks. A special location keeps track of which bank your computer is currently using. Each 64K bank shares your Apple with the memory that resides on the Apple //e motherboard in the same way the 64K on the Extended 80-Column Card does.

Cards following this protocol include Applied Engineering's RamWorks II, AST Research's MegaRam Plus, Checkmate Technology's MultiRam //e, and Legend Industries' E' Card.

Peripheral-Slot Memory Expansion

Apple decided that auxiliary-slot protocol was too complicated and set about to design a new technique that would be simpler for software developers.

It can be argued that Apple's peripheral-slot memory card also requires bank switching to access the memory. In this case, though, the card bank-switches a single byte at a time.

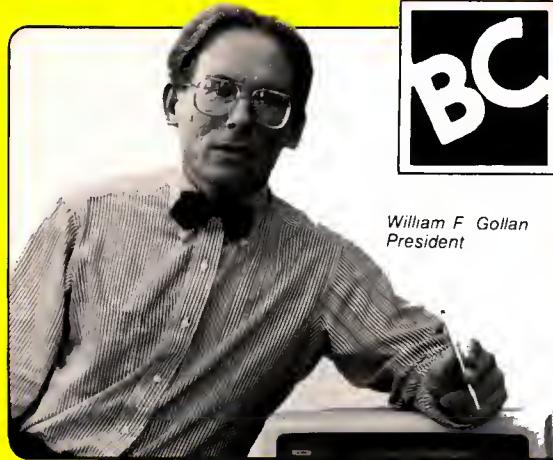
But Apple "strongly recommends" that programmers treat the memory on the card as a block-storage device accessed through the Protocol Converter (motherboard firmware containing the routines that actually accomplish the bank switch), and not write directly to hardware locations (include the bank-switch routines in the program).

Apple suggests this standard to ensure software compatibility with future hardware configurations. Software that follows this recommendation should be compatible with upcoming Apple II's and peripherals. Since auxiliary-slot memory cards don't adhere to this protocol, we can assume that software that accesses extra memory directly won't work with this new Apple equipment.

Under Apple's peripheral-slot scheme, developers can think of the memory as a single, large, contiguous data area, to make programming a lot easier: You don't have to program in the bank addresses—the Protocol Converter takes care of it for you. A program can't execute code from the expansion card, though, but must first transfer it to the Protocol Converter motherboard memory, and that takes some extra time. It also takes time to access small chunks of data spread throughout the card and take the extra step through the Protocol Converter firmware.

Cards supporting this peripheral-slot protocol are Apple's Apple II Memory Expansion card, AST's SprintDisk (switch-hitting here), and Cirtech's Flipster. □

—Peter Baum



William F. Gollan
President



BUSINESS COMPUTERS

OF PETERBOROUGH Gollan Co., Inc.

Upper Union St. P.O. Box 94
W. Peterborough, NH 03468-0094

**"One price . . . ,
and that's**

"We'll support, service, and warranty everything we sell and stand behind it 100%.

MODEMS		GRAPHIC INTERFACES		BUSINESS SOFTWARE		UTILITIES & LANGUAGES	
D.C. Hayes				PBI		Microstuff	
Micro Modem IIe w/sw	139.95	Image Buffer II w/64k	74.95	Graphworks	60.95	CrossTalk	103.95
Smart 1200	369.95	Print It	129.95	JEEVES	37.95	Mindscape	
Smart Modem 2400	579.95	Fingerprint +	94.95	Querk		Mister Pixel's	
Prometheus		Fingerprint + IIC	94.95	Catalyst 3.0	62.95	Cartoon Kit	23.95
Pro 300 IIc w/sw	129.95			Word Juggler 3.0	62.95	Paint Set	23.95
Pro 1200	269.95			Roger Wagner		Color Me (Main)	23.95
Pro 1200 A w/sw	264.95			Mouse Writa	73.95	Hugga Bunch	10.95
US Robotics				Write Choica	30.95	Rainbow Brite	10.95
Password 1200	209.95			Compucard	38.95	Shirt Tales	10.95
Courier 2400	399.95			Label Express	38.95	Tink Tont	10.95
PERIPHERALS						Polerwera	
Amdek						Complete Graph. Sys.	29.95
Color 300 Composita	219.95					Graph. Magician Paint/Anim.	29.95
Color 600 RGB	395.95					Graph. Magician Jr.	14.95
Apple						Pinmarga	49.95
II E's & II C's & Macs	CALL					Modem Enh. Kit	19.95
AST						Pinpoint	39.95
Megaram + w/64k	130.95	AP 80 Image	319.95			Pinpoint Ram Exp.	19.95
Megaram + w/256k	184.95	LX 80	329.95			Pinpoint Spellchecker	39.95
Sprint Disk w/2656	194.95	LX 80 F/T	438.95			Pinpoint Toolkit	30.95
Sprint Disk w/512k	274.95	FX 85	605.95			Point to Point	74.95
Checkmate Tech		FX 286				Roger Wagner	
Multiram II E 64K + 80	124.95	LQ 800	605.95			Merlin Assembler	41.95
Multiram II E 256K + 80	154.95	LQ 1000	799.95			Merlin Combo	68.95
Multiram II E 512K + 80	164.95	Okidata				Merlin Pro	60.95
Multiram II E 768K + 80	234.95	ML 93	339.95			Springboard	
Multiram II E 64K RGB + 80	159.95	ML 182	249.95			Certificate Maker	35.95
Multiram II E 512K RGB + 80	219.95	ML 183	399.95			Newsroom	35.95
Multiram II E 1024K RGB + 80	319.95	ML 192	369.95			Newsroom Clip Art V1	20.95
Multiram II E 1792K RGB + 80	479.95	ML 192 Image	389.95			Newsroom Clip Art V2	23.95
Multiram II EX w/VIP	249.95	ML 193	494.95			Newsroom Graphic Exp V1	27.95
Multiram II CX w/256K	159.95	ML 193 Image	554.95				
Multiram II CX w/512K	199.95	ML 292	509.95				
Multiram II CX16 w/256	299.95	ML 293	639.95				
Multiram II CX16 w/512	349.95	Silver Reed					
Multiram CX 16 Kit w/VIP	209.95	Exp 500	199.95	Activision			
Central Point		Exp 550	329.95	Kitchen's Gama Makar	33.95		
Laser 128	359.95	Exp 800	669.95	Beaverville			
Curtis				Actors & Actions	21.95		
Diamond	34.95			Business	33.95	Bantem	
Emerald	40.95			Blazing Saddles	30.95	Fantastic Animals	28.95
Ruby	59.95			Heroes & Villans	21.95	Roed Reilly USA	28.95
Uni Printer Stand	17.95			Pixel	33.95	Scardsala Diet	28.95
Disks				Princa Color (Epson)	45.95	Barrons	
BASF SS/DD	15.95			Prince Color (Prowriter)	45.95	Coast to Coast	28.95
Maxall MD1 SS/DD	15.95			Shepe Lib. 1,2,3 (aa)	14.95	Computer SAT	56.95
Memorex 3.5"	29.95			Taka 1	37.95	CBS	
Memorex SS/DD	17.95			Beagie Brothers		Adventure Master	29.95
3m SS/DD	15.95					Body in Focus	28.95
Verbatim Bonus SS/DD	13.95					Coast to Coast	28.95
Verbatim Datafaxes SS/DD	18.95					Dinosaur Dig	28.95
Kensington						Goren's Bridge	53.95
Printer Stand	19.95					Mastering SAT	61.95
System Sever	64.95					Success Series (ee)	25.95
Koala Pad +	70.95					Devideon Associates	
Koala Technologies						Alga Blaster	30.95
Kraft	35.95					Classmate	30.95
Kraft Quickstick	54.95					Grammer Gremlin	CALL
Hayes Mech III's	35.95					Homeworker	CALL
HX 9 RGB	399.95					Math Blaster	30.95
HX 12 RGB	419.95					Speed Reader II	41.95
Texan						Spell II	30.95
115 Green	124.95					Word Attack	30.95
116 Amber	129.95					Designware	
GRAPHIC INTERFACES						Body Transparant	29.95
Orange Micro						European Nations	29.95
Grappler +	77.95					Grammar Exam.	30.95
Grappler + w/64k	149.95					Remember	46.95
Grappler + RS-232C	77.95					Spalciplolar	28.95
Grappler C	83.95					Spallakezam	28.95
Hot Link IIc	50.95					States & Traits	29.95
GRAPHIC INTERFACES						Cut & Paste	25.95
Grappler +	77.95					Financial Cookbook	35.95
Grappler + w/64k	149.95					Movie Meker	31.95
Grappler + RS-232C	77.95					Fisher Price	
Grappler C	83.95					Alpha Build	20.95
Hot Link IIc	50.95					1st Man on Moon	22.95
Shipping Free						Jungle Reading	22.95
Back to Basics						Logic Levels	20.95
Back to Basics A/R, A/P, G/L (ea)						Peter R. Reading	22.95
Back to Basics A/R, A/P, G/L (ea)						Peter W. Music	22.95
Back to Basics A/R, A/P, G/L (ea)						Sea Speller	17.95
Back to Basics A/R, A/P, G/L (ea)						Groller	
Back to Basics A/R, A/P, G/L (ea)						Educate	33.95
Back to Basics A/R, A/P, G/L (ea)						Encyclopedia	33.95
Back to Basics A/R, A/P, G/L (ea)						Friendly Filer	27.95
Back to Basics A/R, A/P, G/L (ea)						Hercouri Brace	
Back to Basics A/R, A/P, G/L (ea)						SAT	50.95
Back to Basics A/R, A/P, G/L (ea)						Heyden	
Back to Basics A/R, A/P, G/L (ea)						SAT Math	36.95
Back to Basics A/R, A/P, G/L (ea)						SAT Verbal	36.95
Back to Basics A/R, A/P, G/L (ea)						Learning Company	
Back to Basics A/R, A/P, G/L (ea)						Addition Magician	24.95
Back to Basics A/R, A/P, G/L (ea)						Bumble Plot, Games (ea)	27.95
Back to Basics A/R, A/P, G/L (ea)						Gerritadas Puzzle	29.95
Back to Basics A/R, A/P, G/L (ea)						Gerritadas Secrets	29.95
Back to Basics A/R, A/P, G/L (ea)							



CALL TODAY—ORDERS ONLY 1-800-845-3003

Absolutely
No Additional
Charges *

**free freight . . . , in stock,
my promise."**

Member
Better
Business
Bureau



EDUCATIONAL&PERSONAL

Juggles Rainbow	21.95
Magic Spells	25.95
McTown Hotel	28.95
McTown Parade	28.95
Reader Rabbit	27.95
Robot Odyssey	31.95
Rocky's Boot	31.95
Word Spinner	25.95
Meca	
Managing Your \$	108.95
Milliken	
Addition Seq.	24.95
Division Seq.	24.95
Word Processor	46.95
Mindscape	
Bank St. Music	37.95
Bank St. Story B.	29.95
Keyboard Cadet	28.95
Lusher Profile	28.95
Perfect Score	46.95
Pinpoint	
Added Menus (ea)	13.95
Micro Cookook	29.95
Random House	
Charlie Brown's ABC's	29.95
Charlie Brown Typing	29.95
Charlie Brown 1,2,3's	29.95
Garfield Dbl. Dares	29.95
Garfield Eat Words	29.95
Maze Marathon	29.95
Potato Head	29.95
Peanuts Math	29.95
Peanuts Maze	29.95
Picture Puzzle	29.95
Reading Machine	29.95
Shifty Sem	29.95
Snoopy Writer	29.95
Snoopy Rescue	29.95
Twart	29.95
Scarborough	
Boston Diet	50.95
Build a Book	28.95
Build Refills 1,2 (ea)	16.95
Chem Lab	28.95
Lovejoy SAT	46.95
Masterytype	
Figures & Formulas	21.95
File	28.95
New Improved	28.95
Writing Wizard	50.95
Personal Net W.	51.95
Run for the \$	28.95
Simon & Schuster	
Chem Leb	25.95
Great Paper Air'P	27.95
JK Lesser \$ Mng.	50.95
Lovejoy's SAT	45.95
Make A Metch	22.95
Math Buster	22.95
Typing Tutor III	33.95
Webster's Spelling Ck.	42.95
Spinnaker	
Adv. Creator	23.95
Alphabet Zoo	21.95
BW File/Report	38.95
BW Spreadsheets	38.95
BW Wordproc.	38.95
Counting Parade	23.95
Delta Drawing	27.95
Fraction Fever	19.95
Grendme's House	21.95
Homework Math/Word	29.95
Homework Writing	29.95
In Search of	24.95
Kids on Keys	19.95
Kid Writer	21.95
Kindercomp	19.95
Math Busters	23.95
Rhymes & Riddles	19.95
Snooper Trooper 1,2 (ea)	24.95
Story Machine	27.95
Sum Ducks	23.95
Trains	23.95
Springboard	
Early Games	22.95
Easy ABC	28.95
Fraction Factory	22.95
Mask Parade	28.95
Music Maestro	25.95
Piece Cake Math	22.95
Puzzle Master	25.95
Rainbow Painter	25.95
Stickers	25.95
Timeworks	
Evelyn Wood Reader	43.95

EDUCATIONAL&PERSONAL

Silvia Porter \$ Planner	73.95
Xerox/Weekly Reader	
Sticky Bear	
ABC	28.95
Basic	28.95
Basket Bounce	28.95
Bop	28.95
Codes & Cyphers	28.95
Meth	28.95
Math 2	28.95
Numbers	28.95
Opposites	28.95
Printer	28.95
Reading	28.95
Shapes	28.95
Spellgrabber	28.95
Town Builder	28.95
Typing	28.95
GAMES SOFTWARE	
Racing Dest. Set	CALL
Reach For Stars	32.95
Realm of Impossibility	CALL
7 Cities Gold	28.95
Sky Fox	28.95
Super B. Desh	25.95
Wilderness	35.95
Wizard	32.95
Epyx	
Baseball	25.95
Eidolon	29.95
Fex	20.95
Football	28.95
Gi Joe	21.95
Koronis Rift	29.95
Mission Impossible	24.95
Pitstop	28.95
Summer Games	28.95
Summer Games II	28.95
Temple Asphair	28.95
Winter Games	26.95
Hayden	
Holy Grail	32.95
Sargon III	32.95
Infocom	
Cuthroats	26.95
Deadline	32.95
Enchanter	27.95
Foolbitsky	29.95
Forbidden Quest	28.95
Hitchhiker's G.	27.95
Infidel	29.95
Mind Voyaging	31.95
Planet Fall	27.95
Seestalker	27.95
Starcross	32.95
Sorcerer	29.95
Spell Breaker	33.95
Suspendo	32.95
Wishbringer	28.95
Witness	27.95
Zork 1	27.95
Zork 2,3 (ea)	29.95
Micro Lge. Sports	
Baseball	28.95
Microprose	
Acro Jet	24.95
Conflict Vietnam	27.95
Crusade in Europe	27.95
Decision Desert	25.95
F-15 Strike	25.95
Gunship	25.95
NATO Commander	25.95
Silent Service	25.95
Solo Flight	25.95
Mindscape	
American Challenger	29.95
Crossword Magic	33.95
Deja Vu	39.95
D. Francis High Staker	32.95
Forbidden Castle	29.95
Halley Project	31.95
James Bond Gold F.	29.95
James Bond View K.	27.95
Flacter	32.95
Rambo Part II	27.95
Stephen King Mist	27.95
Tinke's Mazes	22.95
Tink's Sub. Fair	22.95
Tink's Adventure	22.95
Tonk in Buddu Bots	22.95
Tuk Goes Town	22.95
Voodoo Island	27.95
One Step	
Golf's Best Pinehurst	35.95
Golf's Best St. Andrew's Old	35.95
Origin	
Autoduel	42.95
Moebius	42.95
Ultima 3 & 4 (ea)	39.95
Polarware	
Coveted Mirror	12.95
Crimson Crown	12.95
Oo-Topos	12.95
Sword Kadash	12.95
Transylvania	12.95
Xyphus	12.95
Sierra On Line	
Black Calderon	29.95
King's Quest I,II (ea)	33.95
Simon & Schuster	
Frogger 3 Deep	26.95
Spy Hunter	32.95
Super Zaxxon	26.95

GAMES SOFTWARE

Tapper	Sir Tech	32.95
Rescue Raiders		27.95
Wizardry 1		31.95
Wizardry 2		25.95
Wizardry 3,4 (ea)		28.95
Wizprint		19.95
Spectrum		
Gato	Spinnaker/Telarium	25.95
Amazon		27.95
Dragon World		27.95
Fahrenheit 451		27.95
9 Princes		27.95
Perry Mason		27.95
Rendezvous w/Reme		27.95
Shadow Keep		27.95
Strategic Simulations		
Baltic 85		24.95
Battalion Commander		28.95
Battle Group		46.95
Battle Normandy		28.95
Broadsides		27.95
Carrier Force		39.95
Colonial Conquest		32.95
Computer Besiebell		27.95
Field of Fire		32.95
Gemstone Warrior		24.95
Geopolitique 1990		28.95
Imperium Galectum		28.95
Kampfgruppe		39.95
N. Atlantic 86		39.95
Panzer Grendier		32.95
Phantasia II		32.95
Rails West		28.95
Rings of Zifin		32.95
USAAF		35.95
War in Russie		49.95
Sublogic		
Flight Simulator II		34.95
Customer Service		
(603) 924-9406		
* Our Terms and Conditions		
• Shipping UPS Ground: FREE (Lower 48 only)		
• Credit Card Surcharge: 0%		
• Purchase Orders: FOB NH, Handling		
• APO/FPO: FOB NH & Handling		
• Prices & Availability Subject to Change		



CALL TODAY—ORDERS ONLY 1-800-845-3003



FOUR LEADING CHOICES

inCider's hardware guru compares four popular memory-expansion boards.

by Bill O'Brien

Beset by the 64K limits the 8-bit 6502 processor imposes, early Apple II users were confined to small program and work environments. With the //e and //c series, Apple Computer bumped that limit up to 128K. While the 6502 still can't address more than 64K, a clever technique called *bank switching* lets that memory potential expand (see "Bank-Switched Memory," p. 50, for details).

Bank switching is akin to the function of a lazy Susan—while never changing position, it provides you with a multitude of storage trays by rotating its compartments.

It's not difficult to imagine that if you can bank-switch 64K of memory, it should be relatively easy to do the same with larger amounts. That thought seems to have occurred to a few hardware manufacturers, Apple included, and we now see 1-megabyte (and larger) expanded-memory cards on the market.

With that in mind, I've drawn up a brief comparison of four memory-expansion boards (for manufacturer and price information, see the Product Information sidebar on p. 51): Applied Engineering's RamWorks II, Apple's Apple II Memory Expansion card, the AST SprintDisk, and the MultiRam RGB board from Checkmate Technology. They fall into two distinct categories: those you install in the auxiliary slot that come with their own memory-management software, and those you can place in any peripheral slot (except 3—and only in 4, 5, or 6 if you're using Pascal) and utilize ProDOS' built-in memory management (for details, see "Two Roads to Memory Expansion" and its two accompanying sidebars, pp. 46-51).

From a purchaser's point of view, your main consideration might well be the condition of your Apple. If your system is up and running and already equipped with an extended 80-column card (or RGB color interface), the Apple and AST products might appeal to you: You wouldn't have to yank out an existing auxiliary-slot board. On the other hand, the Applied Engineering and Checkmate boards are prime candidates when you're configuring your system at the time of purchase. They each have expansion capabilities that will let you add to your machine as your needs increase without making your current equipment obsolete.

As for which board within each group is the better purchase, consider support and repair facilities. That's how fine the distinctions are between boards in the same category.

RamWorks II

RamWorks II is expandable on board to 1 megabyte. It has built-in 80-column support and plugs into your //e's auxiliary slot. You can connect a daughterboard that expands its memory by as much as 3 megabytes. Another card adds an RGB color interface. What could be better?

As it's easy to play armchair hardware designer, I do have some criticisms. With version 1.2 of Apple's System Utilities, you no longer have a RAM drive (at least, I couldn't find it), although the RamWorks documentation claims you should. There's no other automatic RAM disk because the card is in the auxiliary slot. And AppleWorks 1.3 loads in with only a 55K desktop, despite the 1-megabyte RamWorks II.

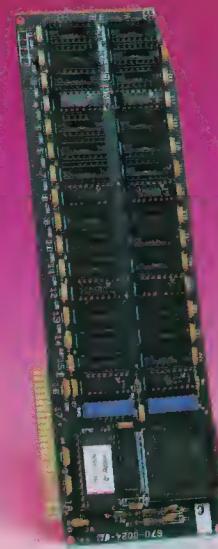
Applied Engineering uses an older approach to managing memory. Essentially, RamWorks ignores your Apple's memory-management routines and uses its own. That's not bad. They include RAM-drive creation utilities, either bundled or optional, which will give you DOS, ProDOS, CP/M, or Pascal RAM disks. They modify AppleWorks to access almost all of the RamWorks board's memory (a portion is reserved for backfill to bring your system up to 128K). Part of that modification lets AppleWorks prompt you for multiple floppies if you're storing a particularly large data file. AppleWorks even loads and runs automatically from within RamWorks memory, so swapping program segments is faster, too. And even though Applied Engineering ignores Apple's state-of-the-art technique, that doesn't mean the RamWorks card isn't efficient and useful.

Unfortunately, RamWorks memory-expansion software doesn't recognize ProDOS pathnames. Since I run AppleWorks on my Sider II hard disk, I can't judge how well RamWorks performs with that package. Applied Engineering's modification utility asks me to insert my AppleWorks start-up disk into drive 1. My Sider won't fit.

I'm sure I could modify a copy of an AppleWorks start-up disk, then transfer it to my hard disk, but I wouldn't

Applied Engineering's RamWorks II





Apple II Memory Expansion



AST's SprintDisk



Checkmate's MultiRam //ex

have to if Applied Engineering would just recognize ProDOS pathnames for the installation. And I'm too set in my ways to return to techniques that were necessary when everything on the Apple II had to be patched to work correctly.

Apple II Memory Expansion

Although it lagged in production of its own 80-column card, Apple was one of the first to announce a memory-expansion board for the //e. It's sold with a minimum of 256K installed and can be placed in any slot except the auxiliary connection and slot 3.

A year ago, the 1-megabyte RAM capacity of this card would have made it outstanding. It's merely in the ballpark right now (Apple's own products have always sparked development of new devices for its computers). It's among the shorter of these four RAM cards, though, because of a single very large-scale integrated (VLSI) circuit that replaces up to 12 ordinary TTL chips. Apple has also included ROM support that lets ProDOS and Pascal automatically recognize the card as a RAM disk if your software doesn't use its expanded memory.

SprintDisk

From a strictly hardware standpoint, the SprintDisk is almost a duplicate of the Apple II Memory Expansion card—but there are some very important exceptions. Although limited to 1 megabyte on board, there's a piggy-back connector for a daughterboard (no slot required) that can add an extra megabyte of RAM.

There are no VLSI chips on the SprintDisk, but it does have on-board RAM-disk support in ROM. You can also format it under DOS as two 400K RAM-disk volumes (with 1 megabyte installed). And AST has added some special software you can use to solve other inherent Apple problems.

This software turns the SprintDisk into a cache system. *Caching* is a way of buffering input and output from slower devices, such as disk or tape drives, or even a hard disk: The software loads a large amount of informa-

tion into cache memory, even if you ask for only a little. For example, an entire volume is "cached" when you transfer one file. On successive searches, your computer looks for the requested information in cache memory first. If it finds your data there, the access speed is as fast as RAM permits. If not, the software retrieves your data from disk and transfers additional data from the file to cache in preparation for your next request.

There's one drawback to AST's cache software, though. While it can speed up disk access considerably, the SprintDisk no longer functions as expanded memory under AppleWorks 1.3. Of course, with two SprintDisks you can select one for cache and the other for memory.

MultiRam RGB

The MultiRam RGB card is an auxiliary-slot board with built-in 80-column and RGB-color support. Its memory is expandable to 1 megabyte on board, or 6 megabytes with daughterboards. (Other Checkmate expander boards are available, as well, even one for battery-backed static memory expansion and one with a 65C816 processor, called the MultiRam //ex card.) Like RamWorks II, it needs special software to manage memory for AppleWorks.

Likewise, you can't access all of the board's memory. Some of it is reserved to hold AppleWorks program segments and as backfill to bring your system up to the 128K needed for 80-column and double hi-res support. But you can specify a pathname containing your AppleWorks programs, so hard disks work simply. Checkmate's installation software also modifies AppleWorks to let you load any or all of the program segments into the MultiRam card. It also prompts you for multiple floppies if the amount of data you're saving is larger than the amount a single floppy can hold.

Write to Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024.



© 1986, 2010 by *Time Inc.*

WHAT'S GOING WRONG IN CLASSROOM SOFTWARE?

The battle between teachers and vendors over pirated classroom software rages on. What's the solution? A dialogue between the warring parties may be the first step toward resolving the issue.

by *inCider* staff

Teachers need classroom software, so many copy it—illegally. And that means developers sell less, so they stop investing dollars in new classroom software. The result: Teachers complain of not enough good classroom software. They're right. Vendors complain they can't make money selling such software. They're right. So everyone loses? Wrong.

Solutions exist, but they're not easy. Some feel that a legal suit against a school would serve to stem the piracy problem by setting an example for everyone who copies. Others urge better education on the subject of piracy and its ramifications. And more creative distribution of software through site licensing (an agreement under which the vendor permits multiple copies at a much lower price) might also help alleviate copying, others say.

But all agree the solution will be discovered only if all groups involved work it out together. Urges David Summer, a junior-high-school teacher and software developer in Scotts Valley, California, "We need to start a dialogue between teachers and vendors. This would make teachers realize what goes into software development and would give vendors a better understanding of what needs to be developed for the classroom."

How Much Piracy?

The scope of software piracy in schools is difficult to judge, says Anne Wujcik of the Talmis research group of Link Resources in New York, because teachers are beginning to clam up on the subject. "No one has a number, although you hear speculations that anywhere from 10 percent to 50 percent of the software in the schools is illegal," Wujcik says. "We can't document the extent of it; we just know it's happening."

Vendors obtain solid evidence of copying through a number of channels. For example, Dr. Donna Craighead of DLM Teaching Resources in Allen, Texas, tells of cop-

ied software disks users have sent back to the company when they encountered problems! Phillip Thompson of Heath/Collamore in Lexington, Massachusetts, relates that on field trips to schools he has encountered illegally copied disks of his company's programs, an experience many vendors appear to have shared. Others talk of receiving praise-filled letters from teachers who live in districts where authorized sales representatives have never ventured.

Carol Bunevich, marketing director at Scholastic Software in New York, points to surveys she has seen that list copy-unlocking programs as the most popular software sold to the school market.

Summer recalls an incident three years ago that involved a high-school student in a neighboring district. An administrator gave the teenager time off from school to make illegal copies of software for the school district.

"I don't think that would happen today," Summer observes, "but it illustrates how widespread the ignorance in this subject has been."

Of course, the most dramatic way to judge the extent of illegal copying is to watch the developer's bottom line. Software publishers don't get a good return on their educational products, they say. Almost everyone agrees that the ultimate price of piracy will be its depressing effect on the quality and quantity of good educational material.

Developers such as Dick Cummins of Writing Software International in Missoula, Montana, suspect that piracy may actually drive some small software shops out of business and cause larger companies to divert their development dollars to other markets. Others, such as Jan Davidson of Davidson & Associates in Torrance, California, say that while illegal copying may not single-handedly bring a company to its knees, piracy certainly can be "the straw that breaks the camel's back."

"We believe some of the more innovative developers are discouraged about putting their efforts into the school market

Quick Stick



PRECISION CONTROL FOR APPLE IIc

The speed of a joystick the smarts of a mouse . . . QuickStick from Kraft does it all for Apple IIc users. QuickStick will run either mice or joystick software. Flick a switch and QuickStick runs your mouse software with accurate, definitive cursor control. Flick the switch again and it's a joystick, ready for business software or fast-action games. A mouse and a joystick in one control product for only \$69.95.

QuickStick for Apple IIc users puts you ahead of the game.

Kraft Systems • P.O. Box 1268 • Vista, California 92083
(619) 724-7146

Circle 231 on Reader Service Card.

Guard Against Life's Little Accidents



With *MICRO DOCTOR*, Care, Troubleshooting and Simple Repair for your Apple® Computer by Hoyt Hilsman, you can prevent 90% of common microcomputer maintenance ills and treat 50% of your problems using household tools.

Micro Doctor

The First Name in Computer Health

Little, Brown and Company
Boston, MA 02108

\$13.95
ISBN 364142

To order, call
800-343-9204



Carol Bunevich of Scholastic Software: "We believe some of the more innovative developers are discouraged about putting their efforts into the school market because of piracy."

because of piracy," Scholastic's Bunevich says. "The end result will be that quality suffers." She observes that Scholastic has "deep pockets" and so can afford to weather the current storm of confusion in the marketplace, but some smaller companies may not be able to wait it out.

"It's ironic," says John Paulson, chairman and chief executive officer of Springboard Software in Minneapolis, Minnesota. "Teachers who copy software are draining away the research and development dollars that would go to develop better products for the school market. They don't realize how shortsighted they're being, nor the impact these actions will have on their future."

Why Illegal Copying?

The problem of copied software is the visible tip of a deeper problem: painfully meager budgets for school supplies. Lack of ample dollars for school materials has long caused desperate teachers to turn to photocopying workbooks and other printed material to meet classroom needs. Most vendors understand that it's in the same spirit that teachers copy software.

"I believe print materials are probably far more copied than software, but for some reason the software community feels more violated than the print publishers," says Steve Rasmussen of EduSoft, a Berkeley, California-based firm that pioneered site licensing for schools. "We at EduSoft understand the plight of the teacher, because almost all of us have been teachers at one time or another. I know how hard it is to get approval for more than one copy of a software package."

Educators readily admit that too little money aggravates the piracy problem. Peter J. Schaefer, a high-school teacher from Maryland, explains that software is written for individual use, but classrooms require group participation. It's impractical, he says, for many schools to make up the difference. Meanwhile, schools are under increasing pressure to let students use software.

"The issue that hangs up many teachers is that they're not copying for profit, but to try to outfit their classes," Schaefer says. "Americans make copies on their videocassette players, on tape cassettes, and on xerox machines, so copying is very much a part of our culture."

On the other hand, Schaefer acknowledges a weakness in this logic. "Carried to its extreme, this kind of thinking would say to a driver-education teacher that it's all right to steal a car so that his students can learn to drive," he admits. "Technically, a school doesn't have the right to make copies, but I understand why teachers are having a tussle over it."

Most vendors understand it, too. They know all too well the budgetary plight of the teacher, because most of them have also spent time as educators. But they're unwilling to continue turning a "blind eye" to the problem.

"I think it's positively shocking for a teacher to copy software," asserts John Paulson, who was a high-school music teacher before turning publisher. It's like taking a group of children on a field trip, he says, and stopping along the way to shoplift in front of them. "Think of the example they're setting!" he says with indignation.

Software vendor Cummins also agrees that lack of funds doesn't justify theft of intellectual property. He recalls that in 1973 he had a budget of \$76 for the school year when he taught writing at Key West High School in Miami, Florida. But he didn't solve his problem by pilfering books from the local bookstore. Instead, he took up a collection among his students, which he supplemented from his own salary, and bought used books that could be passed around the room.

Solutions Needed

Many vendors hope that as teachers become more educated about the problem, they'll voluntarily curb illegal copying. The consensus among these developers is that teachers are responsible people who care about doing the right thing and setting the proper example for those in their charge.

"Their hearts are in the right place," says Paulson, speaking for many of his colleagues.

Education will also help by letting teachers know that copying really is illegal. Some think it's illegal only when the copy is sold. "More education about the problem is needed, because most teachers still don't understand at what point they're breaking the law," says software developer Rasmussen.

Others are concerned that nothing short of legal action will put a stop to the drain on development dollars. Ken Wasch, head of the Software Publishers Association in Washington, D.C., has taken steps on Capitol Hill to make the federal government more aware of the problem, including requesting that the F.B.I. train more agents in the prosecution of software piracy.

"If we had an ironclad case, we wouldn't hesitate to go after a school district," says Wasch, whose organization plans an intensive campaign this year to awaken the educational community. Wasch acknowledges that many teachers still don't understand they're breaking the law.



Jan Davidson of Davidson & Associates: "Cheaper prices aren't the answer. The lower the price, the more the user may feel he's doing nothing wrong."

Great Software for Under \$7.00...

Now is your chance to build your software library at a *very* reasonable cost! For **ONLY \$6.99** you can get software for your Apple computer. Choose from entertainment, home management or education titles. **Save \$1.00** on a 10-pack of DS/DD **Blank Diskettes** with any merchandise order over \$10.00

For the Apple II+, IIc, IIe

Entertainment Series

- A-1 Beginner's Cave, an Adventure
- A-2 Cave of the Mind, an Adventure
- A-3 River Adventure, an Adventure
- A-4 Fore!, Golfing Simulator
- A-5 Lady Luck
- A-6 Space Adventure
- A-7 Classic Games
- A-8 Android Invasion
- A-9 Championship Gambler
- A-10 Chess Champion
- A-11 Memory Quest
- A-12 Wizard & the Princess
- A-13 Ulysses & the Golden Fleece
- A-14 Mission Asteroid
- A-15 Passport to London
- A-16 Passport to Paris

- A-34 Tax Record Organizer
- A-35 Checkbook Balancer
- A-36 JBase

Education Series

- A-37 Mr. Math
- A-38 Speed Reading
- A-39 Beginning Counting
- A-40 Counting Skills
- A-41 Addition I
- A-42 Addition II
- A-43 Addition III
- A-44 Addition IV
- A-45 Subtraction I
- A-46 Subtraction II
- A-47 Subtraction III
- A-48 Multiplication I
- A-49 Multiplication II
- A-50 Multiplication III

- A-51 Division I
- A-52 Division II
- A-53 Division III
- A-54 Division IV

Electric Book Co. Education Series

- A-55 Why?
- A-56 When?
- A-57 The Three Bears
- A-58 Gingerbread Man
- A-59 Baby Animals
- A-60 Hoppy the Curious Kangaroo
- A-61 Wild Animals
- A-62 Tom Thumb
- A-63 I Was a Second Grade Werewolf
- A-64 Tough Eddie

Plus these Super Accessories

- **Universal Blank Diskettes** (for Apple or Commodore) compatible with any 5 1/4" disk drive. Double-notched, DS/DD disks give single-sided users *twice* the storage at the same great price! Box of 5: \$6.99.
- **Blank Diskettes**: 100% certified, DS/DD, Box of 10: \$8.50.

**CALL TOLL-FREE
CREDIT CARD ORDERS ONLY
1-800-257-9411**

In Minnesota CALL:
(612) 829-1911



Firstline Software, Inc.
P.O. Box 5297
Hopkins, MN 55343-2297

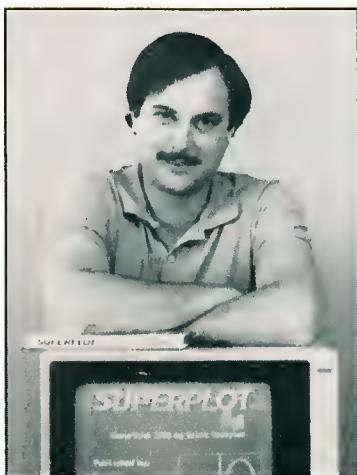
IC 8

ORDER FORM

Please list the ordering number(s) (C-1, A-3, etc.) of the program(s) you wish to order and return this order form along with your check, money order or VISA/MasterCard information to: Firstline Software, P.O. Box 5297, Hopkins, MN 55343-2297.

I'm ordering the following programs:

_____	_____	_____	_____	_____	Total number of software pkgs. _____ x \$6.99 each \$ _____
_____	_____	_____	_____	_____	Boxes of 5 Universal blank disks _____ x \$6.99 per box \$ _____
<input type="checkbox"/>	Check or money order enclosed	_____	_____	_____	Boxes of 10 blank disks _____ x \$8.50 per box \$ _____
<input type="checkbox"/>	VISA	<input type="checkbox"/>	MasterCard	_____	Total amount of order \$ _____
Card # _____				Postage/handling	\$ 2.00
Expiration Date _____				MN Residents add 6% state sales tax \$ _____
Phone () _____				Total (enclose check, money order or fill in VISA/MC information at left) ... \$ _____	
Name _____				U.S. FUNDS ONLY	
Sig. _____ Date _____				Money orders/Credit card orders shipped immediately.	
Name _____				Allow 4-6 weeks for delivery for check orders.	
City _____				Address _____	
				State _____ Zip _____	



Steve Rasmussen of EduSoft: "More education about the problem is needed, because most teachers still don't understand at what point they're breaking the law."

And he notes that schools often add to the temptation to copy by allocating all their "computer" funds to hardware, leaving nothing in the pot for software.

Cummins urges developers to "encourage organizations like the Software Publishers Association to bring suit against a school. This would help educators realize the seriousness of piracy," he says.

And finally, teachers say software vendors must better understand their needs. Developers need to recognize that teachers have small budgets and need lots of software at reasonable prices, they insist. But just making software less expensive won't solve the problem. The need for several copies of the same item must be addressed.

"Cheaper prices aren't the answer. In fact, the lower the price, the more the user may feel he's doing nothing wrong," comments publisher Davidson.

Vendors need to learn to market software in a way that corresponds to the teacher's need for multiple copies, urges Ed Porter, a Santa Cruz, California, high-school teacher. "More network software would be a tremendous help and would make more sense to us than individual floppies," he adds.

High-school teacher Schaefer agrees that getting multiple copies of software cheaply would help alleviate piracy. He says teachers should encourage vendors to provide better on-site licensing and leasing agreements and lower-priced programs. "Most software is still not designed for the classroom setting, nor does it take into account the school's budget," he says.

It's obvious that answers to the problem of illegally copied software in the classroom aren't easy to find. As one teacher puts it, "You can't squeeze blood out of a turnip, nor can you pay for software if you don't have the money." Budgetary constraints aside, educators have long copied other types of materials for their classes and so are baffled at the hoopla over software. Furthermore, the very nature of the technology lends itself to program duplication.

The genuine desire of teachers to "do the right thing," though, may be the force that ultimately resolves the piracy issue. Most vendors are counting on it. But unless it's settled soon, teachers may find less and less good software from which to choose—a sad affair that would hurt the nation's children most of all. ■

Product Information

In 1985 Link Resources of New York surveyed a national group of school district-level microcomputer coordinators to learn which software packages they found most valuable in the classroom. The following programs are ranked according to frequency of mention.

1) Bank Street Writer
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(415) 479-1170
\$69.95
Reader Service Number 317

Scholastic Software
730 Broadway
New York, NY 10003
(212) 505-3000
\$95
Reader Service Number 318

5) The Print Shop
Broderbund Software
\$49.95
Reader Service Number 325

6) The Factory
Sunburst Communications
39 Washington Avenue
Pleasantville, NY 10570
(914) 769-5030
\$59
Reader Service Number 326

7) Math Sequences
Milliken Publishing
1100 Research Boulevard
St. Louis, MO 63132
(314) 991-4220
\$695
Reader Service Number 327

3) Logo
Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
\$250
Reader Service Number 319

8) Magic Slate
Sunburst Communications
\$99.95
Reader Service Number 328

9) Apple Writer II
Apple Computer
\$149
Reader Service Number 329

Networked Logo
Terrapin Software
222 Third Street
Cambridge, MA 02142
(617) 492-8816
\$339.95
Reader Service Number 322

10) MicroType: The Wonderful World of Paws
Southwestern Publishing
5101 Madison Road
Cincinnati, OH 45227
(513) 271-8811
\$39.95
Reader Service Number 330

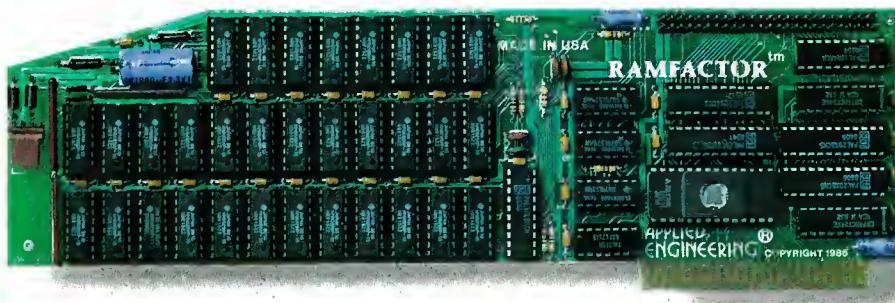
4) PFS:Write, File, Graph, Calc, Plan, Report, Access
Software Publishing
1901 Landings Drive
Mountain View, CA 94043
(415) 962-8910
\$125 each
(combinations available)
Reader Service Number 323

RamFactorTM

All the Performance, Speed, and Software Compatibility of RamWorks™ in a Slot 1 through 7 Card.

That's right! Now Applied Engineering offers you a choice. While RamWorks is the clear winner for the auxiliary slot in a IIe, RamFactor is the standard for slots 1 through 7. Now anyone with an Apple II+, Franklin, or Apple IIe preferring to use slots 1 through 7 can now enjoy the speed and performance that until now was only available with RamWorks.

With RamFactor, you'll be able to instantly add another 256K, 512K, or a full 1 meg on the main board and up to 16 meg with additional piggyback card. And since virtually all software is automatically compatible with RamFactor, you'll immediately be able to load programs into RamFactor for instantaneous access to information. You'll also be able to store more data for larger word processing documents, bigger data bases, and expanded spreadsheets.



Very Compatible

All the leading software is already compatible with RamFactor. Programs like AppleWorks, Pinpoint, BPI, Managing Your Money, Dollars and Sense, SuperCalc 3A, PFS, MouseWrite, MouseDesk, MouseCalc, Sensible Speller, Applewriter IIe, Business Works, ReportWorks, Catalyst 3.0 and more. And RamFactor is fully ProDOS, DOS 3.3, Pascal 1.3 and CP/M compatible. In fact, no other memory card (RamWorks excepted) is more compatible with commercial software.

AppleWorks Power

There are other slot 1-7 cards that give AppleWorks a larger desktop, but that's the end of their story. But RamFactor is the only slot 1-7 card that increases AppleWorks internal memory limits, increasing the maximum number of records in the database and lines permitted in the word processor, and RamFactor is the only standard slot card that will automatically load AppleWorks into RAM dramatically increasing speed and eliminating the time required to access the program disk, it will even display the time and date on the AppleWorks screen with any ProDOS clock. RamFactor will automatically segment large files so they can be saved on 5 1/4", 3 1/2", and hard disks. All this performance is available to anyone with an Apple IIe or II+ with an 80

column card. RamFactor, no other standard slot card comes close to enhancing AppleWorks so much.

True 65C816 16 Bit Power

RamFactor has a built-in 65C816 CPU port for direct connection to our IIe 65C816 card for linearly addressing up to 16 meg for the most powerful 16 bit applications. (II+ 65C816 card under development)

Powerful Program Switcher

With RamFactor, you can organize memory into multiple work areas and switch between them. Each work area can contain different programs and even different operating systems. Now you can switch from one program to another or even switch from AppleWorks to DOS 3.3 to CP/M to Pascal to ProDOS in under a second. And with our Battery back-up option, you can have permanent storage for up to 20 years.

Quality and Support of the Industry Leader

RamFactor is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

Features:

- Up to 16 meg total memory, 256K to 1 meg on main board. Up to 16 meg with additional memory on piggyback card.
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe, II+ and Franklin
- Battery back-up option allows you to turn on your Apple and run your favorite programs in less than 1 second!
- Automatically recognized by ProDOS, DOS 3.3, Pascal and CP/M
- Built-in RamDrive™ software (a true RAM disk not disk caching)
- Systems are directly bootable from RamFactor if desired
- Built-in linear addressing 16 bit co-processor port
- Built-in self diagnostic software
- Automatic expansion with AppleWorks 1.3 or later
- Allows Apple II+ and IIe to run your AppleWorks without buying additional software
- Accelerates AppleWorks
- Displays time and date on the AppleWorks screen with any ProDOS clock
- Fits any I/O slot except slot 3
- Fully socketed and user upgradeable
- Much, much more

RamFactor with 256K	\$239
RamFactor with 512K	\$289
RamFactor with 1 MEG	\$389
RamFactor with 2-16 MEG	CALL
Battery Back-up Option	\$179
65C816 16 Bit Card	\$159

Order RamFactor today . . . with 15 day money back guarantee and our "no hassle" five year warranty. Call 9 a.m. to 11 p.m., 7 days, or send check or money order to Applied Engineering, MasterCard, Visa and C.O.D. welcome. Texas residents add 5 1/4% sales tax. Add \$10.00 if outside U.S.A.

AE Applied EngineeringTM
The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

INSIDE OHIO 1-800-225-0755

OUTSIDE OHIO

YOUR TOLL FREE ACCESS

1-800-228-0755

CALL...FOR THE BEST PRICES...

BEST DELIVERY...

We have hundreds of other
programs in stock at
Fantastic savings.

SILICON EXPRESS! • • •

ALL NEW STORE WITH EXPANDED WAREHOUSE

**SILICON
EXPRESS
DISKS**
SS/DD 7.95
DS/DD 8.95

**VERBATIM
OR MAXELL**
SS/DD 13.95
DS/DD 16.95

ELEPHANT
SS/DD 7.95
SS/DD 8.95
DS/DD 9.95

DATACASE
8.95

**SILICON
EXPRESS! • • •**

Adventure Const.	30.75	Family Roots	149.95
AlgebraLaster	26.95	Fantavision	26.95
Algebra I thru IV	ea. 26.95	Fahrenheit 451	27.49
Algebra V & VI	ea. 26.95	Mouse Desk	22.45
Alphabet Zoo	18.95	Mouse Word	74.95
Alpha Plot	24.89	MouseWrite	71.95
A Mind Forever Voy.	30.95	Most Amazing Thing	22.95
Archon I or II	22.45	Multi Disk Catalog	17.95
ASC II Express	72.50	Net Worth	48.89
Assembly Lines Bk.	16.95	Newsroom	30.50
Auto Duel	37.95	One-On-One	24.50
Auto Works	27.95	PFS: File	69.95
Back-fit-up III	42.00	PFS: First Success	126.00
Bag of Tricks #2	28.00	PFS: Graph	69.95
Ball Blazer	23.49	PFS: Plan	69.95
Bank Street Filer	38.95	PFS: Report	69.95
Bank Street Mailer	38.95	PFS: Workmates	174.95
Bank Street Writer	38.95	PFS: Write	69.95
Bank Street Speller	38.95	Phantasia	27.95
Bard's Tale	28.50	Pixie	19.95
Baron	22.50	Piece of Cake Math	15.95
Beagle Bag	14.95	Picture Builder	23.99
Beagle Basis	17.95	Pinball Construction	21.50
Beagle Graphics	29.95	Pinpoint	39.85
Beneath Apple DOS	13.95	Pitstop II	23.50
Bth. Apl. Pro DOS	13.95	Pixit	31.89
Big U	16.95	Planefall	22.00
Black's Law Dict.	64.95	Practicals II	48.95
Blazing paddles	27.00	Prince	48.95
Bookends	64.95	Printographer	23.85
Bookends Extended	94.95	Print Shop	26.69
Borrowed Time	22.00	Pr. Shp. Gr. #1 or 3	13.95
Breakthru Ardennes	41.95	Print Shop Companion	21.95
Carmen Sandiego	22.45	Print Shop Refill	12.25
Carriers at War	30.75	Problyer	17.95
Captain Goodnight	19.45	Prof. tour golf	25.89
Chshp. Load Runner	44.95	Program Writer	34.95
Chart 'n Graph Tbx.	23.95	Pronto DOS	14.95
Clip Art Vol. 1	15.95	Quicken	51.95
Clip Art Vol. 2	21.75	Rambo	41.95
Complete Graphics	47.89	RDF	24.95
Computer Asbush	41.95	Reach for the Stars	28.50
Computer Baseball	25.89	Report Card	32.95
Computer Quarterback	27.95	Report Works	64.95
Copy II +	18.50	Rescue on Fractalus	23.50
Crossword Magic	30.00	Rescue Raiders	24.95
Crusade in Europe	22.95	Robot Odyssey I	28.00
Crypt of Medea	21.95	Rocky's Boots	28.00
Cut & Paste	23.00	Locksmith	56.95
Cuthroats	23.69	Sargon III	27.20
Database Toolbox	23.95	Sat (Harcourt Brace)	46.99
Dazzle Draw	33.95	Science Tool Kit	32.95
D-Code	19.95	Seastalker	22.00
Deadline	28.00	Sensible Grammar	52.95
Decision in Desert	19.95	Sensible Speller	64.95
Delta Drawing	27.95	7 Cities of Gold	24.50
DiskQuick	14.95	Shadowkeep	23.00
Dollars & Sense	66.50	Shape Mechanic	23.95
DOS Boss	11.95	Sideways	29.95
Double-Take	17.95	Silent Service	19.45
Dragonworld	23.00	Skyfox	24.50
Eagles	27.95	Snooper Trp I or 2	22.95
Early Games	15.95	Solo Flight	19.45
Easy as ABC	20.95	Songwriter	23.89
Eldilon	23.50	Sorcerer	26.00
Enchanter	23.69	Speed Reader II	36.95
Essential Data Dup	41.95	Spelling Bee	34.95
Europe Ablaze	30.75	Spelling Bee	34.95
Extra K	19.95	Spelling Bee	34.95
F-15 Strike Eagle	19.45	Spelling Bee	34.95
Facemaker	17.95	Spelling Bee	34.95
		Minipix	14.69

SILICON EXPRESS
5955 E. Main St. Columbus, Ohio 43213
1-614-868-6868

Spelworks	29.95	Universal file conv	24.95
Spitfire Simulator	24.75	Visable 6502	31.75
Spy Hunter	26.00	War in Russia	51.89
Spy vs. Spy	24.95	Wilderness	38.95
Squire	22.50	Will Writer	28.45
Starcross	28.00	Winter Games	21.45
Star Lg. Baseball	20.95	Wishbringer	27.95
Star Trek	27.95	Witness	22.00
Sticky Bear ABC	23.75	Wizardry	26.50
Basket Bounce	23.75	Wizard's Toolbox	23.95
BOP	23.75	Wizprint	14.25
Car Builder	23.75	Word Attack	26.95
Math	23.75	Word Handler	39.95
Word Perfect	125.95	WordPerfect	125.95
Numbers	23.75	World's Great. Bball	19.45
Opposites	23.75	World's Great. Fball	22.45
Reading	23.75	Write Choice	26.45
Shapes	23.75	Zork I	22.00
Spellgrabber	23.75	Zork II or III	25.00
Town Builder	23.75	Zoom IIE	109.00
Typing	23.75	System Saver Fan	59.95
Story Machine	17.95	Thunder Clock	102.95
Story Maker	24.95	Video 7 (SCG7)	109.95
HARDWARE		Wildcard II	69.95
Sum. Games I or II	22.45	ZEE 80A Checkmate	63.95
80 Col. 64K Card	49.95	Zoom IIE	109.00
SuperCalc 3A	109.95	PRINTERS	
Apple Cat II	184.95	Star NX-10	259.00
SuperDisk Copy	24.95	Star SG-15	394.95
Apple Cat 212	352.95	Star SD-10	344.95
Koala Pad +	70.45	Star SD-15	474.95
Compuserve Starter	21.95	Star SR-10	494.95
Datacase	8.99	Star SR-15	594.95
Take 1	34.00	Disk Notcher	8.95
Prince	48.95	Interface Disk Drive	144.95
Time is Money	57.45	OKidata 182P	229.95
Technical Dictionary	39.95	OKimate 20	209.95
Essential Data Dup 4+	CALL	OKidata 192P	399.95
Temple of Apshai Tri.	22.45	Hotlink	54.95
Flip-n-File	13.95	Printer Stand	16.95
Interface IIC Drive	149.95	Colored Printer Ribns	CALL
Transylvania	19.50	Color Paper Pack	13.95
Triple-Dump	18.95	MQNITORS	
Turbo Pascal 3.0	34.95	Magnavox Monitors	CALL
Koala Pad +	70.45	Amdek Color 600	414.99
Kratt Joystick	25.95	Amdek Video 300G	127.99
Turbo Tutor	20.50	Samsung Color	169.95
Lemon	31.95		
Tycoon	23.25		
Tip Disk #1	12.00		
Quicken	59.95		
Grappler Buttered	130.95		
Think Tank	88.89		
Grappler +	71.95		
Practicals II	48.95		
Grappler (serial)	71.95		
Grappler C	71.95		
Time is Money	57.45		
Interface IIC Drive	144.95		
OKidata 182P	229.95		
OKimate 20	209.95		
OKidata 192P	399.95		
Hotlink	54.95		
Printer Stand	16.95		
Colored Printer Ribns	CALL		
Color Paper Pack	13.95		

**YOUR ORDER FORM
SILICON EXPRESS**

5955 E. Main St. Columbus, Ohio 43213

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CHARGE CARD # _____ Exp. Date _____

QTY. _____ DESCRIPTION _____ PRICE _____

Computer Type _____ SHIPPING _____

Phone No. _____ TOTAL _____

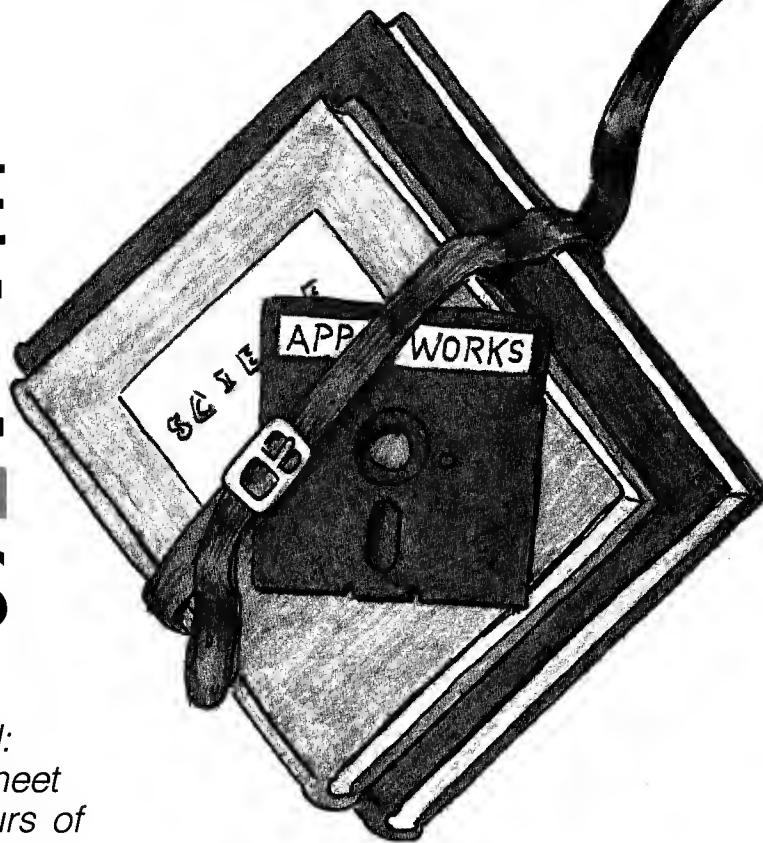
No additional surcharge on Mastercard, Visa, or School purchase orders. Personal checks allow 2 weeks. Shipping charges are \$3.00 minimum. Ohio residents add 5 1/2% state sales tax. Prices subject to change without notice.

MAKING THE GRADE

WITH

APPLEWORKS

*AppleWorks goes to school:
For busy teachers, a spreadsheet
gradebook saves countless hours of
tedious computation.*



by James G. Troutman

Computing student grades by hand is a lesson in frustration for any teacher. Your Apple can help. Many gradebook programs on the market lack the features you need, though, or include so many options they're slow and difficult to use. The solution is simple: With your AppleWorks spreadsheet you can create a gradebook that's convenient, fast, and easy to operate.

Although preparing the initial format takes some time, you'll soon make it up when you begin using your new gradebook. The accompanying AppleWorks spreadsheet also meets one specific need: dropping the lowest score,

a feature not found in some gradebook programs. You can easily edit it to meet other requirements, too, such as weighting grades.

This article assumes readers have a basic knowledge of AppleWorks, but includes detailed directions for lookup tables and IF formulas. **Figure 1** shows the final gradebook report. It's limited to four test scores and a roster of ten students, but is easy to alter for other class sizes and different testing procedures.

When you see a key combination such as OA-V in the following instructions, hold down the open-apple key while typing V. For repeated combinations, such as OA-down arrow (6 times), hold down the open-apple key and press the down arrow six times.

Figure 1. Printed report for AppleWorks gradebook.

MATH 153.04	TEST 1	TEST 2	TEST 3	TEST 4	TOTAL	MIN SCORE	AVERAGE SCORE	FINAL AVERAGE	GRADE	MATH 153.04	NAME
NAME	100	100	100	100	400					NAME	
ABROMITIS R.	94	61	89	88	332	61	83.0%	90.3%	4	ABROMITIS R.	
BECKER T.	86	64	67	71	288	64	72.0%	74.7%	2	BECKER T.	
CAVANAUGH L.	64	74	89	76	303	64	75.7%	79.7%	2	CAVANAUGH L.	
DICKINSON A.	67	73		70	210	67	70.0%	70.0%	2	DICKINSON A.	
GLADFELTER J.	82	70	83	81	316	70	79.0%	82.0%	3	GLADFELTER J.	
KELLER C.	76	67	67	68	278	67	69.5%	70.3%	2	KELLER C.	
LUCKAS F.	90	91	100	95	376	90	94.0%	95.3%	4	LUCKAS F.	
PARR G.	75	77	72		224	72	74.7%	74.7%	2	PARR G.	
RUSSEL D.	79	64	59	53	255	53	63.7%	67.3%	1	RUSSEL D.	
SCOTT E.	78	71	68	73	290	68	72.5%	74.0%	2	SCOTT E.	
MAXIMUM	94	91	100	95	376		94.0%	95.3%	4	MAXIMUM	
MINIMUM	64	61	59	53	210		63.7%	67.3%	1	MINIMUM	
AVERAGE	79.1	71.2	77.1	75.0	287.2		75.4%	77.8%	2.40	AVERAGE	

POWER UP YOUR BUSINESS... SUCCESS WITH APPLEWORKS!

An exclusive collection
of 10 easy-to-use
templates on a disk
that will get the power of
AppleWorks working for you!

Here's the kind of "computer-ease" that goes right to your bottom line! Ten time-saving, work-saving templates that make AppleWorks a full time partner in your business. Instant know-how you can apply immediately to a wide range of valuable business needs, including:

- Prepare a Price Quote
- Personalized Form Letter
- Build a Mailing List
- Create a Customer Database
- Figure a Loan Amortization
- Publish a Company Newsletter
- Analyze your Personal or Business Balance Sheet
- Plan a Home or Business Budget
- Prepare an Annual Expense Summary

Imagine! Any one of the applications included would be worth the low cost of this unique disk all by itself. But you get all ten, ready-to-run templates for just \$29.97. Less than \$3.00 each, PLUS a detailed documentation booklet that guides you quickly and easily into each application.

Start Boosting Your Personal Productivity Now!

Complete the coupon or attached Order Card and mail with payment or CALL TOLL FREE and charge it to your credit card for quickest service and the surest way to boost your productivity...turn your Apple II into a profit center for your business!

CALL TOLL FREE 1-800-258-5473 (In NH, dial 1-924-9471)

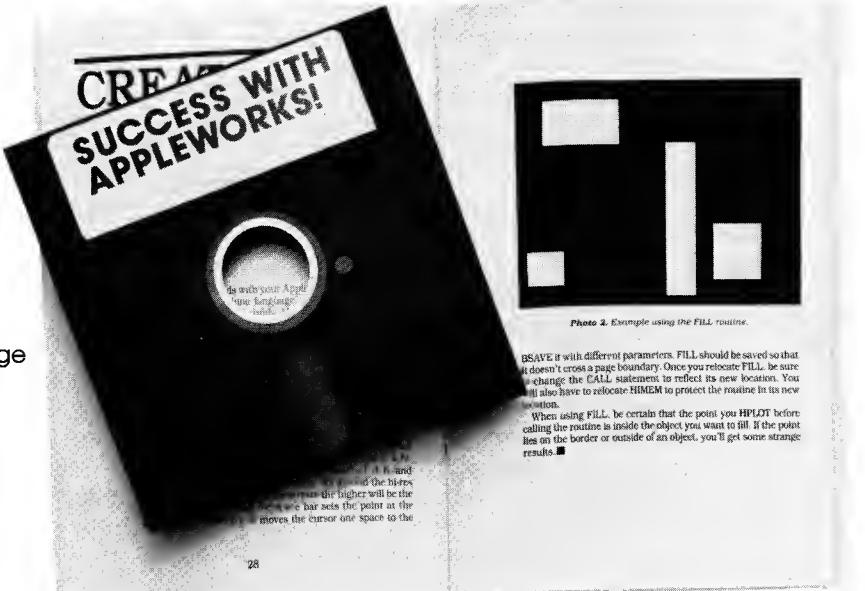


Photo 2. Example using the FILL routine.

BSAVE it with different parameters. FILL should be saved so that it doesn't cross a page boundary. Once you release FILL, be sure to change the CALL statement to reflect its new location. You will also have to relocate HIMEM to protect the routine in its new location.

When using FILL, be certain that the point you HPUT before calling the routine is inside the object you want to fill. If the point lies on the border or outside of an object, you'll get some strange results. ■

YES, send me the added power of hotCider's SUCCESS WITH APPLEWORKS. I get 10 ready-to-run Templates on a disk, plus complete documentation booklet for just \$29.97
Foreign Airmail, add US \$1.50 per item.

Payment enclosed Visa Amex MC

Card # _____ Exp. Date _____

Signature _____

(print) Name _____

Address _____

City _____ State _____ Zip _____

Mail to: **hotCider**
80 Pine St.
Peterborough NH 03458

*AppleWorks and Apple are registered trademarks of Apple Computer, Inc.

Setting Column Widths

We'll start by constructing a general gradebook format you can use repeatedly to construct a grade sheet for each class you teach. Begin by using the AppleWorks Startup and Program disks to bring up a new spreadsheet screen. Choose *Add files to the Desktop* from the main menu, go to *Make a new file for the Spreadsheet, From scratch*, and type a name for this file: GRADE FORMAT.

At this point you should see the Review/Add/Change screen. Use the following description while you set up your spreadsheet so that it looks like the one in **Figure 2**.

Use the layout command, OA-L, to increase the width of column A by six characters. Select *Columns*, highlighting column A, then select *Column width*, press OA-right arrow (6 times), and hit the return key. This will allow you 15 character spaces for each student name.

Reduce columns B, C, D, E, and F by two characters each: Again use OA-L, select *Columns*, highlight columns

B, C, D, E, and F with the right arrow and return keys, select *Column width*, and press OA-left arrow (2 times). End by pressing the return key.

Column G should be reduced to a six-character width: Type OA-L, select column G and *Column width*, press OA-left arrow (3 times) and the return key. Columns H and I should remain at the standard nine-character width.

Reduce column J to six characters the same way you reduced column G. Increase column K by six characters to correspond to column A, since K will also contain student names. Columns L and M should remain at the standard nine-character width.

Labeling Your Spreadsheet

Type labels into rows 1, 2, 15, 16, and 17 as shown in **Figure 2**. Then type OA-L and select *Block* to change the items in B1 through J2 to *Label format, Right justified*. This will make the format labels look like those in **Figure 2**.

Figure 2. Setting up the gradebook spreadsheet.

File: GRADE FORMAT	REVIEW/ADD/CHANGE	Escape: Main Menu
	-----A-----B-----C-----D-----E-----F-----G-----H-----I-----J-----	
11COURSE	TEST 1 TEST 2 TEST 3 TEST 4 TOTAL MIN AVERAGE FINAL	
21NAME	SCORE SCORE SCORE AVERAGE GRADE	
31		
41		
51		
61		
71		
81		
91		
101		
111		
121		
131		
141		
151MAXIMUM		
161MINIMUM		
171AVERAGE		
181		

Figure 3. Locations of formulas for grade calculation.

File: GRADE FORMAT	REVIEW/ADD/CHANGE	Escape: Main Menu
	-----A-----B-----C-----D-----E-----F-----G-----H-----I-----J-----	
11COURSE	TEST 1 TEST 2 TEST 3 TEST 4 TOTAL MIN AVERAGE FINAL	
21NAME	[1] SCORE [1] SCORE [1] SCORE [1] AVERAGE [1] GRADE	
31	[1] [21] [31] [41] [51]	
41	[1] [21] [31] [41] [51]	
51	[1] [21] [31] [41] [51]	
61	[1] [21] [31] [41] [51]	
71	[1] [21] [31] [41] [51]	
81	[1] [21] [31] [41] [51]	
91	[1] [21] [31] [41] [51]	
101	[1] [21] [31] [41] [51]	
111	[1] [21] [31] [41] [51]	
121	[1] [21] [31] [41] [51]	
131	[1] [21] [31] [41] [51]	
141		
151MAXIMUM	[6] [6] [6] [6] [6] [6] [6] [6] [6]	
161MINIMUM	[71] [71] [71] [71] [71] [71] [71] [71] [71]	
171AVERAGE	[81] [81] [81] [81] [81] [81] [81] [81] [81]	
181		

You may want to consider using OA-V to set the *Standards/Value* format to *Commas* with zero decimal places. The numbers you'll use in the table will never be large enough to need commas, but this method of formatting places the numbers one character shy of the right edge of the cell, to produce columns better aligned with the headings.

Figure 3 shows the locations of the formulas that perform the calculations. Formulas will be placed in columns F, G, H, I, and J and in rows 15, 16, and 17.

Formula 1: Total

Using the arithmetic function `@SUM(B2...E2)`, place formula 1 in cell F2. Since you'll need the same relative formula in cells F4 through F13, call up AppleWorks' copy function: Place the cursor on cell F2 and type OA-C, choose *Within worksheet*, and hit the return key to indicate that you want to copy cell F2. Move to cell F4 and touch the return key. Use *Relative* for all reference cells. You'll copy this formula into the remainder of column F later.

Formula 2: Minimum Test Score

Column G will contain the minimum score for each student. In cell G4 type the minimum arithmetic function, formula 2, as `@MIN(B4...E4)`.

Formula 3: Average Score

In the H column you'll need to place the average of all test scores. Move to cell H4 and type in formula 3, `+F4/(@COUNT(B4...E4)*100)`. This formula makes use of the arithmetic function COUNT and lets you enter a blank for a missing grade without affecting the average of the scores. ERROR will appear in cell H4, because you haven't yet included any test grades. Ignore the ERROR message for the moment.

Formula 4: Final Average

We'll place the formula for the final average in column I. As mentioned above, this spreadsheet will use a formula that drops the lowest grade. The formula for this situation is an IF statement that determines whether the student is missing any grades (one of them would be dropped from the calculations).

Indicate a missing grade by leaving a blank space when you type in scores. If you use a zero to represent a missing grade, AppleWorks will still calculate the final average by dropping the lowest grade (now a zero), but the zero will adversely affect the calculations for minimum and average test score.

Move to cell I4 and enter formula 4, `@IF(@COUNT(B4...E4)*100 = F2, +(F4 - G4)/(F2 - 100), +F4/(F2 - 100))`. If there are no blank test scores, the final average is computed as the total of the scores minus the lowest score (G4), divided by the sum of the total possible scores minus 100. If any test is blank, the final average is computed as the total of the scores, divided by the sum of the total possible scores minus 100.

Formula 5: Numeric Grade

If you're using a numeric grading scale of zero = F, 1 = D, 2 = C, 3 = B, and 4 = A, use columns J, L, and M. Column J contains the formula that calculates the numeric grade through a lookup table located in columns L and M. Go to cell J4 and enter formula 5, `@LOOKUP(I4*100,L1...L5)`. Again ignore the ERROR message.

In columns F, G, H, I, and J of row 4, you have now entered all the necessary formulas for calculating individual grades. Now you need to copy them into rows 5 through 13. Place the cursor in cell F4 and type OA-C for copy, select *Within worksheet*, and press right arrow (4 times) to cell J4 to indicate that you want to copy all formulas in this row.

Hit the return key, down arrow to F5, type a period, down arrow through the spreadsheet to cell F13, and press the return key. Use the *Relative* option for all cells in columns F, G, and H. In column I use *Relative* for all cells except the three F2's, which you should enter with *No change*. In column J use the *Relative* option only for the I4; with all other cells use *No change*.

Formulas 6, 7, and 8: Maximum, Minimum, and Average Test Scores

You may find it helpful to tabulate maximum, minimum, and average test scores. To add this function to your spreadsheet, place the appropriate formulas into rows 15, 16, and 17. In cell B15 enter the arithmetic function `@MAX(B4...B13)`. In cell B16 type in `@MIN(B4...B13)`, and in cell B17 enter `@AVG(B4...B13)`. Ignore the ERROR message.

Now copy these formulas into the cells to the right: Place the cursor in cell B15 and type OA-C, *Within worksheet*, highlight B15, B16, and B17, press Return, move to cell C15, and type a period. Use the right arrow to move through the spreadsheet to cell J15. Use the *Relative* option for all cells.

Cell Values and Printer Options

Now it's time to change some of your standard layout values. Begin in B17. Type OA-L, select *Block*, choose through F17, select *Value format*, *Fixed*, and one decimal place. In the H column, type OA-L, selecting *Columns*, choose through column I, select *Value format*, *Percent*, and one decimal place.

Move to column L. Type OA-L, select *Column highlighting*, *Column L*, *Value format*, *Fixed*, and two decimal places. Blank cells G15, G16, and G17 by moving to G15; type OA-B, select *Block*, select through G17, and press Return. Finally, in cell J17 type OA-L, select *Entry*, *Value format*, *Fixed*, and two decimal places.

You need to insert several set values into your spreadsheet. Place a zero in cells B2, C2, D2, and E2. Type a zero in cell L1, 59.99 in L2, 69.99 in L3, 79.99 in L4, 89.99 in L5, zero in M1, 1 in M2, 2 in M3, 3 in M4, and 4 in M5.

To access your printer options, type OA-O, set the characters per inch to 12, the top margin to 1, bottom margin to 1, and *Print Report Headers* to *No*.

Now save the final gradebook format with OA-S.

Initializing the Gradebook

At the beginning of a semester, construct a gradebook for each section you're going to teach. With the AppleWorks Startup and Program disks, choose *Add files to the Desktop*, the *current disk*, and your *Grade Format* file. Use OA-N to rename it; for purposes of illustration, call your class MATH 153.04.

Figure 4. AppleWorks gradebook with first test scores entered.

REVIEW/ADD/CHANGE										Escape: Main Menu		
A	B	C	D	E	F	G	H	I	J	K	L	M
11MATH 153.04	TEST 1	TEST 2	TEST 3	TEST 4	TOTAL	MIN	AVERAGE	FINAL	AVERAGE	MATH 153.04	0.00	0
21NAME	100	0	0	0	100	94	94	94.0%	ERROR	ABROMITIS R.	59.99	1
31						86	86	86.0%	ERROR	BECKER T.	69.99	2
41ABROMITIS R.	94					64	64	64.0%	ERROR	CAVANAUGH L.	79.99	3
51BECKER T.	86					67	67	67.0%	ERROR	DICKINSON A.	89.99	4
61CAVANAUGH L.	64					82	82	82.0%	ERROR	GLADFELTER J.		
71DICKINSON A.	67					76	76	76.0%	ERROR	KELLER C.		
81GLADFELTER J.	82					90	90	90.0%	ERROR	LUCKAS F.		
91KELLER C.	76					75	75	75.0%	ERROR	PARR G.		
101LUCKAS F.	90					79	79	79.0%	ERROR	RUSSEL D.		
111PARR G.	75					78	78	78.0%	ERROR	SCOTT E.		
121RUSSEL D.	79											
131SCOTT E.	78											
141												
151MAXIMUM	94	0	0	0	94					MAXIMUM		
161MINIMUM	64	0	0	0	64					MINIMUM		
171AVERAGE	79.1	ERROR	ERROR	ERROR	79.1					AVERAGE		
181												

Figure 5. Gradebook spreadsheet after three tests.

REVIEW/ADD/CHANGE										Escape: Main Menu		
A	B	C	D	E	F	G	H	I	J	K	L	M
11MATH 153.04	TEST 1	TEST 2	TEST 3	TEST 4	TOTAL	MIN	AVERAGE	FINAL	AVERAGE	MATH 153.04	0.00	0
21NAME	100	100	100	0	300	61	81.3%	91.5%	4	ABROMITIS R.	59.99	1
31						64	72.3%	76.5%	2	BECKER T.	69.99	2
41ABROMITIS R.	94	61	89		244	61	81.3%	91.5%	4	CAVANAUGH L.	79.99	3
51BECKER T.	86	64	67		217	64	72.3%	76.5%	2	DICKINSON A.		
61CAVANAUGH L.	64	74	89		227	64	75.7%	81.5%	3	GLADFELTER J.		
71DICKINSON A.	67	73			140	67	70.0%	70.0%	2	KELLER C.		
81GLADFELTER J.	82	70	83		235	70	78.3%	82.5%	3	LUCKAS F.		
91KELLER C.	76	67	67		210	67	70.0%	71.5%	2	PARR G.		
101LUCKAS F.	90	91	100		281	90	93.7%	95.5%	4	RUSSEL D.		
111PARR G.	75	77	72		224	72	74.7%	76.0%	2	SCOTT E.		
121RUSSEL D.	79	64	59		202	59	67.3%	71.5%	2			
131SCOTT E.	78	71	68		217	68	72.3%	74.5%	2			
141												
151MAXIMUM	94	91	100	0	281					MAXIMUM		
161MINIMUM	64	61	59	0	140					MINIMUM		
171AVERAGE	79.1	71.2	77.1	ERROR	219.7					AVERAGE		
181												

In cell A1 replace the label COURSE with MATH 153.04. Beginning in A4 and continuing through A13, enter the names of the ten students in the class. If you place their last names first you can later use OA-A to arrange your gradebook in alphabetical order.

Copy all of column A into column K to allow for easier reading. Type OA-C with the cursor in A1, and select *Within worksheet*, down arrow to A17, and Return. Move to cell K1 and copy column A by pressing the return key. It's easier to read column K when it's right-justified, so type OA-L, *Column*, Return, *Label format*, and *Right justified*. You've already entered your students' names and are ready to begin the marking period.

Entering Test Scores

To see your AppleWorks gradebook in action, enter the student scores for test 1. Begin in cell B2. Replace the zero with the highest possible test score—use 100 as an example. List each student's test score in the appropriate cell, B4 through B13.

If you find the time between individual scores too long, change to manual recalculation: Type OA-V, *Recalculation*, *Frequency*, and *Manual*. (Be sure to type OA-K after entering the test scores.) **Figure 4** shows your gradebook after you've typed in the first test scores. Note that the Final Average and Grade show ERROR, since you need at least two test results to drop the minimum score.

As further illustration, type in student scores for tests 2 and 3. **Figure 5** shows your gradebook after you've entered three tests. Column F totals all test scores, G contains the minimum score, H calculates the average score, I drops the minimum score and recalculates the average, and J gives a numeric letter grade.

You can complete your AppleWorks spreadsheet by entering the last test score in column E. Your gradebook should now look like **Figure 1**. Note that **Figure 1** isn't a screen display, but a copy of the gradebook printout. If you want to list the grades in increasing or decreasing order, use OA-A to rearrange column H.

Your spreadsheet gradebook will save you hours of tedious arithmetic—and you can tailor it to fit individual needs. Spend your time and energy pursuing more creative areas of education, and let AppleWorks compute your classes' grades. ■

SPELL IT OUT

Your Apple II is a tireless tutor that can help students master spelling and memorization.

by Tom Addicks

Every school-aged child faces the task of learning to spell and memorizing lists of words—and parents are often called upon to help.

Spelling Program, which is actually a series of six short programs, is designed to make this learning process more enjoyable for both child and parent. Possible subjects include states and capitals, science vocabulary, and foreign languages. This program can also help younger children learn to alphabetize.

How It Works

The program is broken down into six parts. First-time users must add their words by choosing 1 from the menu (see **Listing 1**). This creates a text file containing the words, and keeps count of the number of words in the file. After creating a lesson, you can either enter another lesson or proceed to the program itself.

Choosing 3 from the menu loads the HELLO program you've just created, and randomly chooses a word from the list. The program then presents you with the words *aardvark* and *zymurgy* (from **Listing 2**). The cursor waits until you type in a word that falls alphabetically between these two extremes (see the **Figure**).

Listing 1. Creating the opening menu.

```
5 VTAB 10
7 HOME
10 PRINT "SPELLING PROGRAM DEVELOPED BY:
15 PRINT "TOM ADDICKS"
20 PRINT "688 SOUTH MAIN STREET"
25 PRINT "GT. BARRINGTON, MASS."
30 PRINT "61230"
40 FOR I = 1 TO 3000: NEXT I
45 HOME
50 PRINT "CHOOSE ONE OF THE FOLLOWING."
55 PRINT : PRINT
60 PRINT "1 = ADD WORDS"
70 PRINT "2 = COMBINE LESSONS"
80 PRINT "3 = RUN THE SPELLING PROGRAM"
85 PRINT "4 = DELETE LESSONS"
86 PRINT "5 = PEEK AT THE WORDS"
87 PRINT
90 INPUT "YOUR CHOICE? "; NS
100 IF NS = "1" THEN PRINT CHR$(4); "RUN LESSON.FILE"
110 IF NS = "2" THEN PRINT CHR$(4); "RUN COMBINE"
120 IF NS = "3" THEN PRINT CHR$(4); "RUN SPELLING"
125 IF NS = "4" THEN PRINT CHR$(4); "RUN ERASE"
127 IF NS = "5" THEN PRINT CHR$(4); "RUN INSPECT"
130 GOTO 90
```

Entering a list word replaces one of the extremes, so the child must now choose repeatedly until he or she "finds" the word the computer chose randomly. If the child types a misspelled word, the program responds that the word isn't in the list. A counter at the top right of the screen keeps track of the number of guesses.

Children and adults can use Spelling Program in any number of ways:

- Students can work together. As one child recites suit-

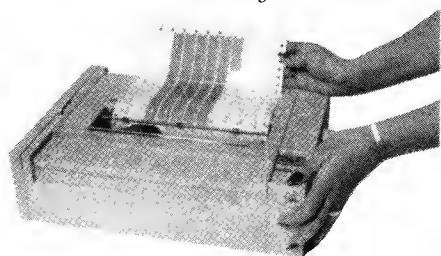
Listing 2. The main Spelling Program.

```
5 HOME : REM SPELLING PROGRAM DEVELOPED BY T. ADDICKS 11/85
20 HOME
40 PRINT CHR$(4); "CATALOG"
45 DS = CHR$(4); DIM WS(200)
46 PRINT
50 INPUT "WHICH LESSON? "; LI$
70 PRINT DS; "OPEN LESSON "; LI$
80 PRINT DS; "READ LESSON "; LI$
90 INPUT N
100 FOR X = 1 TO N
110 INPUT WS(X)
130 NEXT X
140 PRINT DS; "CLOSE LESSON "; LI$
150 XX = INT(N * RND(1)) + 1
160 TA$ = WS(XX)
180 AS = "AARDVARK"; Z$ = "ZYMURGY"
190 HOME
200 HTAB 30; VTAB 1: PRINT C" GUESSES"
210 GOSUB 370
220 VTAB 6; HTAB 17: INPUT "", WS
230 C = C + 1
240 GOSUB 500
250 IF WS = TA$ THEN GOSUB 410
260 IF WS < TA$ THEN GOTO 150
270 FOR I = 1 TO N
280 IF WS = WS(I) THEN GOTO 340
290 NEXT I
300 HOME : VTAB 18
310 PRINT "NOT ONE OF YOUR WORDS"
320 FOR V = 1 TO 2000: NEXT V
330 GOTO 190
340 IF WS < TA$ THEN AS = WS
350 IF WS > TA$ THEN Z$ = WS
360 GOTO 190
370 REM GRAPHICS
380 VTAB 6: PRINT "": VTAB 6:
PRINT AS: VTAB 6: HTAB (41 - LEN(Z$)): PRINT Z$ : VTAB 6:
390 VTAB 2: PRINT "CHOOSE A WORD BETWEEN: "
400 RETURN
410 REM YOU GOT IT
420 HOME : PRINT "YOU FOUND IT!": FOR I = 1 TO 3000: NEXT I
430 INPUT "WOULD YOU LIKE TO PLAY AGAIN (Y/N)? "; Y$
440 IF Y$ = "Y" THEN 460
450 HOME : PRINT "BYE": END
460 INPUT "SAME LESSON? (Y/N) "; Y$
470 C = 0
480 IF Y$ = "N" THEN 50
490 RETURN
500 REM TRAILING SPACE ELIMINATOR
510 Q1$ = WS$
520 IF RIGHTS(Q1$,1) < > " " THEN WS = Q1$: GOTO 540
530 Q1$ = LEFT$(Q1$, LEN(Q1$) - 1): GOTO 520
540 RETURN
```

COMMUNICATE BETWEEN COMPUTERS...



ON PAPER



Use Mac or Apple files on a PC? Difficult? Not with the revolutionary Cauzin Softstrip™ System. With it you can easily move data between incompatible computers. Transfer ASCII or binary, word processing, data base or spreadsheet files. Mac to PC. PC to Mac. Apple to PC. And back again.

Picture a complete system. One that provides a simple and reliable way to distribute and retrieve information. Anything you can put on a magnetic disk, you can put on a Softstrip data strip. Facts. Figures. Software programs. Video games. Product demonstrations. Sheet music. And the list goes on.

A new industry standard, Softstrip technology, has rapidly changed the shape of computer software. You've probably already noticed the change on the pages of leading magazines. Data Based Advisor. MACazine. Nibble mac. MacUser. // Computing. Keyboards Computers & Software. These are just some of the growing ranks of publications featuring programs and data editorially in a form you can scan right into your computer — without typing!

But that's just the beginning of the Softstrip story and the real art of stripping...

How can you take an Apple file and read it into a PC word processor?

- Enter your document in DOS 3.3 AppleWriter, or convert a ProDOS AppleWriter file to DOS 3.3, or save an AppleWorks file as ASCII and convert it to DOS 3.3.
- Print your file as strips using Apple STRIPPER™.
- Read the strips into the PC with the Softstrip reader.
- Follow directions contained in READTHIS.TXT (strip above, right).
- Run "RED2BLUE" (strip above, left) to convert the Apple file for your PC word processor.

Circle 233 on Reader Service Card.

TECH SPECS

The Reader is lightweight and portable. It comes complete with all the software and cables you should need to connect it to your PC; Apple II series; or Macintosh computer. It has its own power supply and connects to standard RS232 ports (or to the Apple //e cassette port).

ALL YOU NEED TO START STRIPPING...
besides your computer, a Softstrip reader, and STRIPPER™ (the "make-it-yourself Softstrip data strip program").

FOR IBM PC or 100% COMPATIBLE OWNERS
Epson RX or FX printer
Printer interface card

FOR APPLE II OWNERS
Epson RX or FX printer, or,
Apple ImageWriter I or II, and,
Super Serial™ card (built into Apple //c), or,
Grappler™ graphics card, or,
Dumpling™ graphics card.

FOR MACINTOSH OWNERS
Apple ImageWriter I or II

You can buy the Softstrip System for only \$199.95 (STRIPPER™ is only \$19.95 and an extra accessory kit is also only \$19.95) at all better computer stores. For the one nearest you, or to order direct, (if there is no dealer in your area) call: 1-800-533-7323 in Connecticut: 203-573-0150.

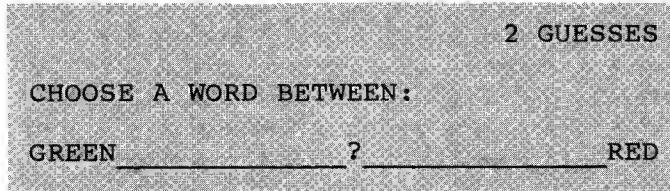
Dumpling is a trademark of Microtek, Inc.
Grappler is a trademark of Orange Micro, Inc.
Epson is a registered trademark of Epson America, Inc.
Macintosh is a trademark of Mcintosh Laboratories, and is licensed to Apple Computer, Inc.
Apple is a registered trademark and ImageWriter II, and Super Serial Card are trademarks of Apple Computer, Inc.

IBM is a registered trademark of International Business Machines Corporation.
Softstrip and STRIPPER are trademarks of Cauzin Systems, Inc.

Cauzin Systems, Inc.
835 South Main St., Waterbury, CT 06706

able choices, the other must type each into the computer with correct spelling to progress.

Figure. In this sample screen, the child must choose and correctly spell a word between GREEN and RED.



- A child can work alone without a list. The program challenges the student to remember list words from categories such as the 50 states or presidents of the United States.
- You can create a file containing single letters to help the child learn alphabetic sequence. You can make alphabetizing more difficult by adding words that begin with the same few initial letters.
- Children can study foreign-language vocabulary. French, Spanish, or Latin words appear on screen as the student reviews their English equivalents, which he or she keeps next to the computer.

Teachers, students, and parents can find other creative uses for Spelling Program. Other choices on the menu let you combine lists or lessons—a cumulative review of spelling words, for example. In addition, you can delete lessons, or inspect the words included in each.

Analyzing the Program

Lines 40–140 in Spelling Program (**Listing 2**) catalog the disk and load the words into an array. Line 150 randomly chooses a word, and the TA\$ (TArget) becomes the term sought. The subroutine between lines 370 and 400 provides screen output.

Lines 220 and 230 wait for and count your guesses (WW\$ and C, respectively), while the subroutine beginning at line 500 eliminates trailing spaces you may have accidentally entered when you made a guess. Line 250 sends the program to YOU FOUND IT and lets you exit the pro-

Listing 3. Combining several lessons into one.

```

5 HOME
10 DIM WS(100)
20 C = 0; S = 0
30 REM LESSONS TOGETHER
40 INPUT "COMBINE HOW MANY LESSONS? "; LS
50 FOR X = 1 TO LS
60 INPUT "LESSON # "; LT$(X)
70 NEXT X
75 PRINT
80 DS = CHR$(4)
90 FOR X = 1 TO LS
100 PRINT DS; "OPEN LESSON "; LT$(X)
110 PRINT DS; "READ LESSON "; LT$(X)
120 INPUT NN
130 E = Y + NN
140 FOR Y = S TO (E - 1)
150 INPUT WS(Y)
160 PRINT WS(Y)
170 FOR I = 1 TO 300: NEXT I
210 NEXT Y
220 PRINT DS; "CLOSE LESSON "; LT$(X)
230 S = E
235 PRINT
240 NEXT X
250 REM CREATES A MANY LESSON FILE
260 INPUT "LESSON NAME "; L1$ 
270 PRINT DS; "OPEN LESSON "; L1$ 
280 PRINT DS; "WRITE LESSON "; L1$ 
290 PRINT E
300 FOR J = 0 TO E
310 PRINT WS(J)
320 NEXT J
330 PRINT DS; "CLOSE LESSON " L1$ 
335 INPUT "WANT TO COMBINE MORE LESSONS (Y/N)? "; Y$ 
336 IF Y$ = "Y" THEN PRINT CHR$(4); "RUN COMBINE"
337 HOME
340 PRINT "TYPE 'PR#6' TO REBOOT."
350 END

```

gram, enter a new lesson, or continue the same one. If there's no match, lines 340 and 350 swap positions and return you to line 190 to make another guess.

The Combine program (**Listing 3**) merges lessons by opening each text file and loading the contents into an array (W\$) while keeping track of the number of items in each. Beginning at line 250, which combines chosen lessons, the program creates a new lesson.

Listing 4. Erase, simply deletes the text file from your disk, while Inspect (**Listing 5**) opens the file and prints each item on screen, so that you can determine the contents of the file.

Listing 4. Deleting text files from your disk.

```

10 REM ERASE
20 HOME
30 PRINT CHR$(4); "CATALOG"
40 PRINT
50 INPUT "ERASE WHICH ONE? "; ES
60 PRINT CHR$(4); "DELETE LESSON "; ES
70 INPUT "ERASE ANOTHER (Y/N)? "; Y$ 
80 IF Y$ = "Y" THEN GOTO 20
90 HOME : PRINT "TO RUN SPELLING, TURN OFF THE COMPUTER": PRINT "AND REBOOT."

```

Listing 5. Inspecting the contents of a file.

```

10 REM PEEK AT WORDS
20 HOME
30 INPUT "LOOK AT WHICH LESSON? "; LA$
35 PRINT
40 DS = CHR$(4)
45 DIM LS(200)
50 PRINT DS; "OPEN LESSON "; LA$
60 PRINT DS; "READ LESSON "; LA$
70 INPUT N
80 FOR C = 1 TO N
90 INPUT LS(C)
95 PRINT LS(C)
100 FOR I = 1 TO 500: NEXT I
110 NEXT C
120 PRINT DS; "CLOSE LESSON "; LA$
125 PRINT
130 PRINT "TYPE 'PR#6' TO REBOOT."

```

Listing 6. Creating a lesson file.

```

5 HOME
10 DIM W$(50)
20 REM LESSON FILE
30 DS = CHR$(4)
35 PRINT "ADD WORDS"
40 INPUT "LESSON #: "; L1$
50 INPUT "HOW MANY WORDS ARE YOU ENTERING? "; N
60 PRINT "TYPE EACH WORD AFTER THE PROMPT."
65 PRINT
70 FOR X = 1 TO N
80 INPUT "WORD-----"; WS(X)
90 IF X = N THEN PRINT "THAT WAS YOUR LAST WORD."
100 NEXT X
105 PRINT
110 INPUT "ARE ALL YOUR WORDS CORRECT? (Y/N) "; NS
120 IF NS = "N" THEN GOTO 30
130 PRINT DS; "OPEN LESSON "; L1$ 
140 PRINT DS; "WRITE LESSON "; L1$ 
150 PRINT N
160 FOR J = 1 TO N
170 PRINT WS(J)
180 NEXT J
190 PRINT DS; "CLOSE LESSON "; L1$ 
200 REM FILE IS WRITTEN
210 INPUT "DO YOU WISH TO ADD MORE WORDS (Y/N)? "; Y$ 
220 IF Y$ = "Y" THEN PRINT CHR$(4); "RUN LESSON.FILE"
230 PRINT
240 HOME
250 PRINT "TYPE 'PR#6' TO REBOOT."

```

Lesson.File (**Listing 6**) creates a file by generating an array with W\$ and writing the words stored in W\$ to a text file. Programmers can enlarge arrays by changing the appropriate DIM statements. Lessons that are too large make finding target words too difficult, though: No one ever memorized a spelling list by learning 100 words at a time. Appropriately sized files will give younger children the boost they need in spelling and memorization. ■

Write to Tom Addicks at Box 703, Housatonic, MA 01236.

August 1988

APPLEWORKS IN ACTION

Working with a Customer Data Base—Part 1

“Each customer is vitally important. This data base helps you stay in touch.”



by Ruth K. Witkin

Murphy Vending installs small vending machines (the ones that dispense gumballs, candy, toys, and trinkets) in high-traffic locations, mainly supermarket, discount, and variety chain stores. The arrangement works well on both sides—Murphy gets the floor space, the store gets a share of the profits. Each customer is vitally important. A loss of even one chain store can mean the loss of many outlets.

Let's pretend you're Larry Murphy. In this session, the first of three parts, you enter categories and records into a customer data base, change the layout of the multiple-record screen, create a report format for the master account list shown in **Figure 1**, view the list on screen, select records from the list, and print the list. This data base helps you stay in touch with your customers, analyze sales, and generate mailing labels for marketing material.

Next month I'll explain how to use the customer data base to print reports containing calculations, and in October I'll show you how to convert one of these reports into a spreadsheet to do spreadsheet-style calculations.

Keystrokes and Other Matters

When you see such key combinations as OA-Y, hold down the open apple key and type Y. With repeated combinations, such as OA-left arrow (11 times), hold down the open apple key, and press the left arrow key 11 times.

You'll be working with the insert cursor—the blinking underline—until the instructions say otherwise. If you make a typo, press Delete to back up the cursor and erase the character.

Several times during the creation process, I'll ask you to save the data base. If you have a one-drive system, watch the screen for prompts that tell you when to swap the Program disk for the data disk.

Creating the Data Base from Scratch

Use the AppleWorks Startup and Program disks to bring up a new data-base screen. Name this file **CUSTOMERS**. You should now see the Change Name/Category screen.

This data base contains 15 cate-

gories, two of which are spares—dubbed, aptly enough, SPARE. It's a good idea to have at least one in every data base. If you later want to enter another category (as you'll see in next month's column), you can just type over SPARE with a different name and make your entries. Without a spare, you'll have to insert a category, which will wipe out any custom screen layouts and report formats.

Here's what the category abbreviations stand for: ACC# is account number, B# is the code number for the company's type of business, LYTD\$ is last year-to-date sales, and YTD\$ is current year-to-date sales.

First enter the category names. The cursor is on the C in **Category 1**. Press OA-Y to erase these words. Now type in the following category names (be sure to press the return key after each one): **ACC#, COMPANY, STREET, CITY, STATE, ZIP, CONTACT, TITLE, BUSINESS, B#, LYTD\$, YTD\$, SPARE, and SPARE.**

Check to make sure that every category is entered and spelled correctly. If one's missing, place the cursor on the category name immediately below the spot where the missing one belongs, press OA-I to insert a blank line, type the category name, press OA-Y to delete the dash at the end, and press Return.

Press OA-S to store the data base on disk. AppleWorks now automatically goes into the Insert New Records mode. Press the space bar or the return key, and Record 1 appears with all the categories awaiting your entries.

Inserting New Records

Figure 2 shows the entries in Records 1 to 9. The B# category identifies the customer's type of business: 1 is a food chain, 2 is a variety chain, and 3 is a discount chain. These numbers serve the same purpose as the description in the BUSINESS category, but take up less room on a report.

Setting a Standard Value

A standard value is an entry that's common to most or all of the records. The contact person in six of the nine records is president of the company,

APPLEWORKS IN ACTION

which qualifies **President** as a standard value. Press the down arrow key (8 times) to move the cursor to the **TITLE** category. To set the standard, press OA-V, type **President**, and press Return. Press the escape key to return to Record 1, which now shows President in the **TITLE** category.

Making Entries in the Records

Press the up arrow key (9 times) to return to the **ACC#** category. Now enter the rest of the information in

Record 1: Type **87** and press Return. Type **Family Centers** and press Return. Type **123 Apple Square** and press Return. Refer to **Figure 2**, and continue typing the entries in Record 1, pressing the return key after each one. After the contact name, press Return twice to skip past the **President** entry. After you type **11070** in the **YTD\$** category, press Return, then OA-down arrow to bring up Record 2.

Now fill Records 2 to 9. Before you start, however, take a few moments to read the following instructions:

Record 3: The contact's title in Record 3 is **VP, Operations**, not **President**. When you get to this entry, press OA-E to switch to the overstrike cursor (a blinking rectangle) and type **VP, Operations** over **President**. Leave the overstrike cursor activated.

Record 4: American Stores is a new customer, so there's no sales figure for last year. To skip past the **LYTD\$** category, press Return twice after you type the business code.

Records 5 and 6: Type over the standard **President** with the title shown in **Figure 2**.

Now enter the information in Records 2 to 9 as you did in Record 1. When you're finished, the cursor should be in the first **SPARE** category in Record 9. Press OA-S to store the data base on disk.

Changing the Screen Layout

The first five categories in all the records should now be on screen. If they're not, press OA-1. Some entries (company and street) are truncated, while others (account number, state, and zip) have more room than they need. AppleWorks makes it easy to change the column widths so that you can see the complete entry and fit more categories on the screen.

Press OA-L to bring up the Change Record Layout screen. Let's start by reducing the width of the **ACC#** category: Press OA-left arrow (11 times). Now press the right arrow key to move the cursor to each of the following categories and adjust the column width in the same way:

COMPANY: press OA-right arrow (5 times)

STREET: press OA-right arrow (2 times)

CITY: press OA-left arrow (5 times)

STATE: press OA-left arrow (12 times)

ZIP: press OA-left arrow (8 times)

Now press the escape key. AppleWorks asks which way the cursor should travel when you press Return. The standard *Down* is fine, so press the return key. The Review/Add/Change screen returns with seven categories nicely spaced.

It makes more sense to arrange your records alphabetically by company name instead of randomly as you entered them. Press the tab key to move the cursor to the **COMPANY** category. Now press OA-A. AppleWorks proposes *From A to Z*, which is what you want, so press Return.

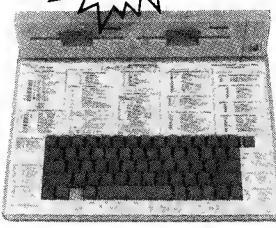
Creating a Report Format

Next, create a report format for the master account list. Press OA-P to

LEROY'S CHEATSHEET®

KEYBOARD OVERLAYS

only \$5.95 each



plastic laminated

APPLEWORKS
 APPLE WRITER II (ProDOS)
 BASIC (DOS 3.3)
 BASIC (ProDOS)
 BLANKS (Set of 3-Not Laminated)
 FLEET SYSTEM 3
 FLIGHT SIMULATOR II
 FOR THE BEGINNER (DOS 3.3)
 GRAPPLER + Interlace
 LOGO (Apple)
 LOGO (Terrapin)
 MULTILAN

SUPERCALC 3a
VISICALC
WORDSTAR
IMAGEWRITER Printer
EPSON RX & FX 80/100
GEMINI 10x & 15x
OKIDATA 92/93
PRACTICALC II
SCREENWRITER II
SPEEDSCRIPT
SUPERBASE

SHIPPING: \$1.00 per OVERLAY order U.S. & Canada \$3.00 Foreign

INDICATE WHICH COMPUTER YOU USE

IIa DIE-CUT OVERLAYS
lit over the keyboard

IIc 7" x 10 1/4" two sided,
REFERENCE CARDS

Forget about constantly referring back to the manual for operating commands. Discover all the "special" commands and short-cuts buried in the manual. LEROY'S CHEATSHEETS® are Plastic Laminated help sheets designed for use with popular software, hardware, and languages for **APPLE IIe** & **IIc** computers. The commands are grouped together by Function enabling you to learn the program faster and easier. Actual keystrokes are in **BOLD** and any variable data is represented in **ITALICS**. With LEROY'S CHEATSHEETS® you'll never have to hunt for a program command again.

EQUIPMENT STAND By LEROY

only \$19.95



✓ WELDED STEEL Construction
✓ 18" Wide 4" High 11" Deep
✓ VINYL COATED - 1/4" Diameter
✓ ORGANIZE Your system NOW

SHIPPING: \$3.00 Continental U.S.
\$3.00 Alaska Hawaii Canada
(NO Foreign Orders)

ATTENTION IIc OWNERS

only \$12.95



✓ VACU-FORMED PLASTIC
✓ SUPPORTS HEAVY MANUALS
✓ ADDS 75 SQ. IN. WORKSPACE
✓ GREAT FOR REFERENCE CARDS
✓ DOESN'T BLOCK AIR VENTS

THE ACCESSORY YOU'VE BEEN WAITING FOR

LEROY'S Apple IIc
 DOCU-TRAY

Fit perfectly, right on top of your Apple IIc creating a place for your reference cards or a manual. Helps organize your workspace and puts needed information where you need it most—right in front of you!

SHIPPING: \$2.00 U.S. \$3.00 Canada & Foreign

U.S. funds—NO C.O.D.
SUBTOTAL _____
SHIPPING _____
6% TAX
PA RESIDENTS _____
TOTAL _____

MC/VISA _____ EXP. DATE _____
NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

CPI CHEATSHEET PRODUCTS INC
P.O. Box 111368 Pittsburgh, Pa. 15238 (412) 781-1551

cid8 

Figure 1. Master Account List created with the customer data base.

File: CUSTOMERS	Report: MASTER ACCOUNT LIST	STREET	CITY	STA ZIP	PHONE	CONTACT	Page 1 8-23-86 B#
ACC# COMPANY							
179 Ace Supermarkets	72 Harrison	Concord	CT	06623	203-555-4560	Gil Freeman	1
85 Allied Grocers	52-A William St.	Hillsburg	NY	14107	518-555-0787	Evelyn Aven	1
153 American Stores	333 Sheffield St.	Stoville	NY	11456	516-555-8765	Ollie O'Day	2
142 Arbor Sales Co.	567 12th St.	Lincoln	NJ	08904	201-555-2300	Ben W. Smith	3
43 Crown Supermarts	105 Columbus Ave.	Boston	MA	02110	617-555-0220	Homer Capella	1
56 Dollar Shops Inc.	12 Elman St.	Miami	FL	33110	305-555-0600	Don Johnson	3
87 Family Centers	123 Apple Square	Ellsworth	NJ	07215	409-555-9876	Fay L. Byrd	2
22 Key Markets	5 Grand Ave.	Tandy	MO	20643	301-555-2621	Ken Wolin	1
63 Off The Shelf, Inc.	90 Adams St.	Addison	CT	06520	203-555-9008	Connie Dowd	3

Figure 2. Records 1 to 9 in an AppleWorks customer data base.

CATEGORY	RECORD 1	RECORD 2	RECORD 3
ACC#:	87	43	179
COMPANY:	Family Centers	Crown Supermarts	Ace Supermarkets
STREET:	123 Apple Square	105 Columbus Ave.	72 Harrison
CITY:	Ellsworth	Boston	Concord
STATE:	NJ	MA	CT
ZIP:	07215	02110	06623
PHONE:	609-555-9876	617-555-0220	203-555-4560
CONTACT:	Fay L. Byrd	Homer Capella	Gil Freeman
TITLE:	President	President	VP, Operations
BUSINESS:	Variety	Food	Food
B#:	2	1	1
LYTD\$:	12564	19517	33722
YTD\$:	11070	18203	35999
SPARE:			
SPARE:			
CATEGORY	RECORD 4	RECORD 5	RECORD 6
ACC#:	153	142	85
COMPANY:	American Stores	Arbor Sales Co.	Allied Grocers
STREET:	333 Sheffield St.	567 12th St.	52-A William St.
CITY:	Stoville	Lincoln	Hillsburg
STATE:	NY	NJ	NY
ZIP:	11456	08904	14107
PHONE:	516-555-8765	201-555-2300	518-555-0787
CONTACT:	Ollie O'Day	Ben W. Smith	Evelyn Aven
TITLE:	President	Purchasing Agent	VP, Purchasing
BUSINESS:	Variety	Discount	Food
B#:	2	3	1
LYTD\$:	28560	32100	32645
YTD\$:	9321	32742	32645
SPARE:			
SPARE:			
CATEGORY	RECORD 7	RECORD 8	RECORD 9
ACC#:	56	22	63
COMPANY:	Dollar Shops Inc.	Key Markets	Off The Shelf, Inc.
STREET:	12 Elman St.	5 Grand Ave.	90 Adams St.
CITY:	Miami	Tandy	Addison
STATE:	FL	MD	CT
ZIP:	33110	20643	06520
PHONE:	305-555-0600	301-555-2621	203-555-9008
CONTACT:	Don Johnson	Ken Wolin	Connie Dowd
TITLE:	President	President	President
BUSINESS:	Discount	Food	Discount
B#:	3	1	3
LYTD\$:	30450	10987	25000
YTD\$:	32345	13450	28567
SPARE:			
SPARE:			

GOLEM COMPUTERS

APPLE

SOFTWARE/HARDWARE

AT SUPER SAVINGS

PLACE ORDERS TOLL FREE

1-800-345-8112

PA 1-800-662-2444



LIST PRICE GOLEM PRICE

HARDWARE SPECIALS

212 APPLE CAT II SYSTEM (NOVATION)	365.00
MICROMOEM II/E/SMARTCOM I (HAYES)	135.00
SMARTMOEM 300/SMARTCOM II (HAYES)	155.00
SMARTMOEM 1200 RS-232 (HAYES)	374.00
PROMOEM 1200A W/SOFT (PROMETHEUS)	255.00
PROMOEM 300C IIIC (PROMETHEUS)	84.00
MACH III JOYSTICK W/FIRE BUTTON (CH PROD)	32.00
BUFFERED GRAPHER + (ORANGE MICRD)	119.00
PRINTER XX-1091 (PANASONIC)	242.00
2 POS. PARALLEL SWITCH (GOLEM)	50.00
MONITOR VIDEO 300A AMBER (AMDEK)	127.00
BLANK MEDIA SS/DO 10 (GOLEM)	8.50

EDUCATION

TYPING TUTOR III	49.95	29.00
MATH BLASTER!	49.95	26.15
TURBO TUTOR (RED. CP/M)	34.95	22.00
MASTER TYPE	39.95	23.40
READER RABBIT	39.95	23.40
WORD ATTACK!	49.95	26.15
WHERE IS CARMEN SAN DIEGO	39.95	23.40

HOME

DOLLARS AND SENSE II+/IIC 64K	100.00	66.00
DOLLARS AND SENSE IIe/IIC 128K	119.95	66.00
CROSSWORD MAGIC	49.95	29.15
NEWSROOM	49.95	35.00
CLIP ART VOL 1 FOR NEWSROOM	29.95	17.00
MICROCDOKBOOK (II+, IIe, IIc)	ea. 49.95	26.20

UTILITIES

THE PRINT SHOP	44.95	29.15
THE PRINT SHOP GRAPHICS I, II, III	ea. 24.95	14.25
SIDEWAYS	60.00	31.10
TURBO PASCAL (RED. CP/M)	69.95	36.30
TURBO TOOLBOX (RED. CP/M)	69.95	36.30
CROSSTALK (RED. CP/M)	195.00	117.15

WORD PROCESSING

SENSIBLE SPELLER IV (DOS, PRD, DOS)	ea. 125.00	64.00
HOMEWORD (64K, 128K)	ea. 69.95	40.70
PFS:WRITE II	125.00	70.00
BANK STREET WRITER (64K or 128K)	ea. 69.95	40.90
BANK STREET SPELLER	69.95	40.70
WORDSTAR	350.00	181.25

BUSINESS

PFS: REPORT, FILE, GRAPH	ea. 125.00	70.00
BACK TO BASICS ACCT. SYS. IIc	195.00	98.45
THINK TANK	150.00	77.85
BPI GA, AP, AR PAYROLL (PRO OOS)	ea. 425.00	220.00

RECREATION

GATO	39.95	21.00
SARGON III	49.95	29.15
FLIGHT SIMULATOR II	49.95	31.90
WISHBINGER	39.95	22.85
SPY HUNTER	44.95	26.40
KARATEKA	39.95	20.50
F-15 STRIKE EAGLE	34.95	20.75
ZORK I	39.95	22.85
ZORK II, III	ea. 44.95	25.60
WINTER GAMES	40.00	23.40
ULTIMA II, III	ea. 59.95	35.00
WIZARDRY	44.95	29.15
HITCHHIKERS GUIDE	39.95	22.85
LEGACY OF LLYLGAMYN	39.95	23.40
KNIGHT OF DIAMONDS	34.95	20.35
KING'S QUEST	49.95	29.15
DRAGON WORLD	39.95	23.40

PLACE ORDERS TOLL FREE

1-800-345-8112 • PA 1-800-662-2444

ALL ITEMS SUBJECT TO AVAILABILITY

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

To order call toll free or send check or money order VISA/MC/C.O.O. orders welcome. Personal and company checks allow 10 working days to clear. Specify if to backorder or to send refund. California residents add 6% sales tax. Include phone number with order. Shipping and handling: All shipments U.P.S. if possible. Continental U.S. add \$2.50 for 1 to 3 items, 4 to 6 items add \$5.00, A.P.O., F.P.O. Alaska, Hawaii and Canada add \$3.00 per item. 2nd day air add \$3.00. All hardware purchases are prepaid or VISA/MC, shipped U.P.S. P.S. - include 5% for shipping & handling. C.O.O. orders all \$1.90. Mail orders to:

GOLEM COMPUTERS

P.O. BOX 6698 • WESTLAKE VILLAGE, CA 91359

Apple is a trademark of Apple Computers, Inc.

APPLEWORKS IN ACTION

start the Print command, and follow these steps to create a new tables format and give the report a name: Press Return, type **MASTER AC-COUNT LIST**, and press the return key again. The Report Format screen appears with commands, cursor movements, the first three entries in the first six categories, and part of a seventh category on the right.

It would be great to print every category, but there's a limit to the number that can fit across a page. This

report, therefore, contains only the account number, company name, street, city, state, zip, phone, contact, and business code. The other categories—title, business, last year-to-date, year-to-date, and both spares—are deleted. You can reinsert these deleted categories at any time.

So that you can see the categories you're deleting, press the right arrow key 14 times, then the left arrow key six times. Your cursor should be in the TITLE column. Now delete unnec-

essary categories: Press OA-D twice, press the right arrow key, and press OA-D (4 times). The cursor is now on *Len117*, the print width of the remaining categories.

The plan is to print this report at 12 characters per inch, which allows for an estimated 96 characters per line. To produce the proper spacing, you need to make some columns wider, others narrower. Hold down the left arrow key to move the cursor to column A (ACC#). To reduce the width, press OA-left arrow (8 times). Press the right arrow key to move to each column (except CONTACT, which remains as is for now) and adjust the width as follows:

COMPANY: press OA-right arrow (7 times)
STREET: press OA-right arrow (5 times)
CITY: press OA-left arrow (2 times)
STATE: press OA-left arrow (9 times)
ZIP: press OA-left arrow (5 times)
PHONE: press OA-right arrow (1 time)
B#: press OA-left arrow (10 times)

The print-width indicator should now read *Len96*.

Let's prepare for printing. Press OA-O to bring up the Printer Options screen. Set the character size and top margin, and tell AppleWorks you want the report double spaced: Type **CI** and press Return. Type **12** and press Return. Next, type **TM** and press Return. Type **.5** and press Return. And finally, type **DS** and press the return key again. Now press the escape key to return to the Report Format screen.

To get an idea of what this report will look like on paper, display it on screen first: Press OA-P, type **2**, and press the return key twice. Here are the first seven categories of the first seven records. Press the return key again, and the last two records appear. Press the return key again to return to the Report Format screen.

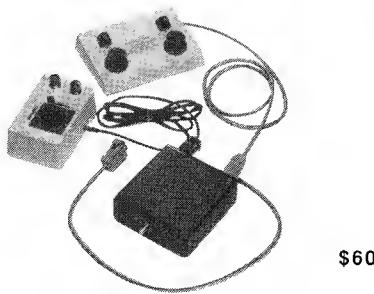
Printing the Report

It's printing time, so turn on your printer. Press OA-P to start the Print command, and follow these steps to print one copy of the report: Type a printer number and press Return, type today's date, and press the return key twice.

When the printer stops, take a close look at the contact name in the Crown Supermarts record. The last a in *Capella*, which you couldn't see on screen, is missing. Compare the right edge of the date in the header with the B# category—it's a clue. Although the Printer Options screen says you can print an estimated 96 characters

Multiport

The multiport unit extends the game peripheral plug in the Apple IIe or IIc and the IBM PC or XT for easy access. Three devices can be switch selected on the Apple computers and two devices on the IBM. Stop having to change plugs every time you change devices. Just plug both your Joystick and Gamepaddles into Multiport and change one switch to select between devices.

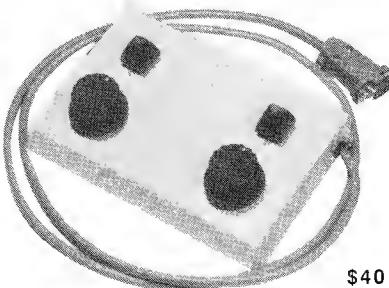


\$60

PSS Joystick Adapter

The PSS Joystick Adapter was designed to allow utilization of digital type joysticks (i.e., Atari*, Commodore* style) with the Apple computer. One Easy-to-use flip switch toggles from normal operation to joystick mode.

Suitable for use on the Apple IIe or II+ computers. With IIe, regular Apple controllers (i.e., gamepaddles, joysticks, and Paddle Panel) can be plugged into the computer in the normal manner with no interference. A Select-A-Port* device is recommended when used with an Apple II+ computer



\$40

Paddle Panel

The Paddle Panel replaces the hand held gamepaddle devices allowing better control as well as bilateral manipulation activities. The Paddle Panel units are available for use with Apple IIe, IIc, Atari and IBM computers. It plugs directly into the game I/O port on the back of the computer. Precision components were used to insure accuracy and to produce a quality "feel".

This hardware is compatible with programs produced by Psychological Software Services, Inc. and any other programs requiring standard gamepaddle input.

To order send check or money order to:

Psychological Software Services, Inc.
6555 Carrollton Avenue
Indianapolis, IN 46220
(317) 257-9672

Institutional Purchase Orders accepted. Individuals should enclose check or money order.
No shipping charges on pre-paid orders.

Atari is a registered trademark of Atari, Inc./Apple is a registered trademark of Apple, Inc./IBM is a registered trademark of IBM, Inc.
Commodore is a registered trademark of Commodore, Inc./Select-A-Port is a registered trademark of TG Products, Inc.

Back Issues

at 12 characters per inch, it's clear that AppleWorks can print 97 characters—a good thing to know if you need a tad more room.

Move the cursor to the CONTACT column and increase its width by pressing the OA-right arrow key once. The indicator now shows *Len97*. Print the report again by pressing OA-P and the return key (3 times). Perfect. Press OA-S to store your work on disk. Saving the data base brings back the Review/Add/Change screen.

Selecting Records for Printing

Let's suppose you want to send a list of New Jersey customers to your local branch office. First, return to the Report Format screen: Press OA-P and press the return key twice. Leave the cursor in the ACC# column.

Next, tell AppleWorks you want to select the records by state: Press OA-R, type **5**, and press the return key. The screen now shows 12 selection criteria. The highlight is on *equals*, which is what you want, so press the return key again. You now need to specify the comparison information. Type **NJ** and press Return. The third line at the top left of the screen shows *STATE equals NJ*. AppleWorks now asks if you have any other comparison information. You don't, so press the escape key.

You're all set to print the selected records. Press OA-P and the return key (3 times). And here's the report on Arbor Sales and Family Centers. To return the selection to all records, press OA-R and type **Y**. That's all there is to it.

Though the temptation may be great, don't change anything in this data base. Next month, when you create reports that do calculations, you'll want everything exactly as is. (You can, of course, give the data base a different file name and play around with that one.) ■

Ruth K. Witkin is a consultant in computer applications for business. She is the author of Managing Your Business With Multiplan (Microsoft Press), Managing With AppleWorks (Howard W. Sams & Co.), Personal Money Management With Multiplan (Hayden Books), and Personal Money Management With AppleWorks (Hayden Books). Write to her at 5 Patricia Street, Plainview, NY 11803. Enclose a stamped, self-addressed envelope if you want a personal reply, but please be patient.

Yes, back issues of *inCider* are available for all months, but in limited quantities. Here's a short list of some of the best of what we've published in the past:

January 1985: Apples and VCRs, Computerized tax returns, "LORES TO HIRES," Joysticks—selection and adaptation, "Match Point," Readers' game choices

February 1985: Simplified word processing, ProDOS's file structure, Apple Writer explained, "PORTAL," "Raider," "TYPE," Manageable business templates

March 1985: Seven small-business case histories, Spreadsheet guide, Spelling checkers, "BKUPWRITER," "Trap It," "Mini-catalog," Trivia contest

April 1985: Guide to buying printers, "Hello Menu," "PRO-CAT," Caps-lock tips, introducing 'Editors' Choice'—The Sider, World's Fastest Typist, ProDOS menus

May 1985: Modems at home and in business, Modem guide, ProDOS commands, "Modem Battleship," EDGE 1.000

June 1985: On-line data bases, Travel arrangements by modem, Inside Delphi, The //c Flat Panel Display reviewed, Word processor as a BASIC editor, New ProDOS commands, "Galactic Jim," 2-bit contest

July 1985: Voice recognition, "Should I Trade?," Configuring the //c's serial ports, The ProDOS link with BASIC, Creating an analog-to-digital converter

August 1985: Four popular Apple programming languages, Introducing 'Pascal Primer,' SuperCalc3a reviewed, An inexpensive portable //c, DOS 3.3 to ProDOS program modifications

September 1985: Apple user groups, Six hard disk drives reviewed, New readership poll—"BackTalk"

October 1985: Seven RGB monitors reviewed, Vector-shape animation, "MENACE," Adventure-game programming, Introducing 'Right of Assembly'

November 1985: New Apple products announced, Local area networks, Apples in the classroom, Buying educational software, "Balloons," "Grid Maker"

In each back issue you'll also find our regular features, including reviews of important new software and hardware. Also, advice on business applications and programming from our nationally recognized team of columnists.

Each back issue costs \$3.50 plus \$1 shipping and handling. On orders of ten or more back issues, there is a flat \$7.50 shipping and handling fee. Quantities are limited so some issues may not be available. Send your orders to *inCider*, Attn.: Back-Issue Orders, 80 Pine Street, Peterborough, NH 03458.

Articles set off by quotation marks are published complete with type-in program listings.

APPLESOFT ADVISER

Scrambler

"Scrambler demonstrates some of the ways you can use BASIC to work with words and letters."



by Dan Bishop

Applesoft's ability to manipulate numbers was illustrated in the Compuapple program, presented last month (July 1986, p. 73). Using that program, you can turn your Apple into a five-function calculator—a rather expensive one at that.

But your Apple has many capabilities that go far beyond those of simple calculators. One such feature is its ability to handle alphabetic characters. Scrambler (see the **Program listing**) demonstrates some of the ways you can use BASIC to work with words and letters.

Literals and String Variables

BASIC provides two methods of handling alphabetic information in a program. One way is to enter the alphabetic text as part of the program itself. In this case, you must place the text within quotation marks. Because you can't change it during program execution, its value remains constant, and it's referred to as a *literal*, or *string constant*. In the BASIC command

PRINT "TODAY IS TUESDAY"

the computer "sees" a literal expression enclosed in quotation marks. The computer won't interpret the characters in the literal—the command is to PRINT, and the object to be printed is a string of alphabetic characters that means nothing to the computer.

The problem with literals is that you can't change them. If the above command appears in your program, the computer will display TODAY IS TUESDAY on screen every time you run the program, no matter what day of the week it is.

Another way to represent alphabetic information in BASIC is to use *string variables*. A variable is a one- or two-character name for a memory address that stores information in the computer. If the information you want to store is alphanumeric (rather than purely numeric), BASIC requires a dollar sign after the variable name. The dollar sign makes the variable a string variable. Examples of string-variable names Applesoft allows include A\$, F3\$, LK\$, ZZ\$, and N\$.

As with numeric variable names, the first character must be alphabetic (A through Z), while the second character

can be alphabetic or numeric. You can use longer names, but Applesoft will use only the first two characters. For example, Applesoft treats both CUSTOMERNAME\$ and CUSTOMERCITY\$ as CU\$, and the program will lose data if you use them simultaneously.

You assign actual values to string variables with a simple assignment statement. For example,

DY\$ = "TUESDAY"

stores the value TUESDAY in memory with the string variable DY\$ (read "D-Y-string") attached to it. Now, whenever you want to use the word TUESDAY within your program, you just use DY\$.

The INPUT command provides a more versatile way to assign values to variables. INPUT lets you enter your data from the keyboard and assign them to the variables attached to the INPUT statement. For example, the two following BASIC commands

200 PRINT "WHAT IS YOUR NAME?"
210 INPUT NM\$

display the prompting message, WHAT IS YOUR NAME? on screen. The computer then stops until you type something in and press the return key. Whatever you type in is then stored in memory with the variable name NM\$. The command PRINT NM\$ will now display that information.

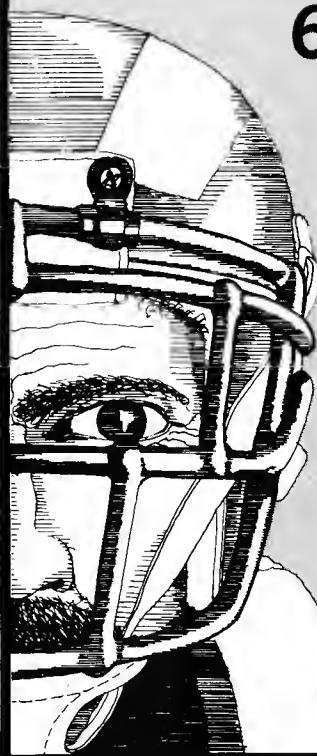
You should be able to see how string variables can be more useful than literals. If Ann runs the program and types ANN in response to the prompt, the program from that point on substitutes the word ANN every time it encounters NM\$. Later, when Bob runs the program and enters BOB at the prompt, the program will use his name whenever NM\$ crops up. Note that lines 150 and 160 in the **Program listing** follow the same example.

Chopping and Dicing

BASIC has several functions you can use with text information; Scrambler includes three of them. The LEN function returns a value that corresponds to the number of characters (including blank spaces) the string contains. For example, if you enter the two commands

PIK'EM 86

★ A Complete Pro Football
★ Prediction Program For The
★ 1986 NFL SEASON



61% +

Accurate vs 'Spread' Since 1981
More Features — More Information In 1986 To

BEAT THE SPREAD

★ ★ FEATURES ★ ★

- Predicted Scores Each Week
- Season Schedule By Week/Team
- Records & Results:
 - Scores By Week
 - Scores By Team
 - Division Standings
 - Standings vs Line
 - Stats — Accumulated & Average
 - 1983-1985 Data Base
- Auto Opponent Input
- Printed Copy All Screens
- Easy Update—Playoffs/1987
- Dealer Inquiries Invited

54⁹⁵ INCLUDES DISK, DOCUMENTATION
SHIPPING & HANDLING

- Apple II — IIc — Ile
- Commodore 64 — 128
- IBM PC, Tandy & Compatibles
- TRS-80 MIII/IV

Stats Needed To Run Program
Available In Local Newspapers
Or

We Will Furnish Stats By Mail Or Modem
All 20 Weeks — Season Price . . . 40⁰⁰

Program Comes Updated Thru Current
Week Of Season . . . No Extra Charge

ORDERS SHIPPED IN 2 DAYS
PHONE LINES OPEN 24 HRS.

TOLL FREE — 800-722-2277
TEXAS COLL. — 214-586-8212

MARATHON SOFTWARE DEPT. I
P. O. BOX 1349
JACKSONVILLE, TEXAS 75766

TOLL FREE & COLLECT FOR ORDERS ONLY



C.O.D.



Circle 118 on Reader Service Card.

SCRG

SOUTHERN CALIFORNIA RESEARCH GROUP

quikLoader

The quikLoader™ provides absolute security of programs. The program can be put onto an EPROM chip, plugged into the quikLoader, and the quikLoader plugged into any slot of the APPLE™ II, II+, or IIe. The program cannot be misplaced, and it will load when needed.

Any program that can be loaded as files can be stored on the quikLoader with the aid of an EPROM programmer board (such as the PROMGRAMER™), and our new PROGRAMMERS AID program. Up to 512K of programs can be stored on each quikLoader. Access to these programs can be as easy as turning on the computer.

An example of a practical application is APPLEWORKS™. We can transfer your copy of APPLEWORKS for an additional \$89.50, and the program will be up and running within 2 seconds after turning on the computer. There is no need to use either the startup or program disks.

The quikLoader provides many other benefits. As soon as power is applied, DOS loads automatically from the card. Included with the quikloader are the popular programs FID and COPYA. These programs, as well as any that you add, will show on the catalog screen. The program is selected with a single keypress.

Installation is easy, just plug it into any peripheral slot. It will work on a APPLE II, II+, or IIe.

\$179.50

DOS 3.3, Integer, Fid, and COPYA are copyrighted programs of APPLE COMPUTER Inc., and are licensed to Southern California Research Group for distribution only with quikLoader.

APPLE and APPLEWORKS are trademarks of APPLE COMPUTER INC. quikLoader (designed by Jim Sather) is a trademark of S.C.R.G.

PROMGRAMER™

Designed by Bob Brice Software by Bob Sander-Cederlof
The PROMGRAMER is an inexpensive EPROM programmer for the APPLE II, II+, and IIe computers. The unit plugs into any slot of the computer, and allows programming any standard 5 volt, 27 series EPROM. The ZIF socket allows rapid programming, copying, duplication, or modification of EPROMs.

\$149.50

SLOT 3 CLOCK™

The SLOT 3 CLOCK is designed to plug into slot 3 of the IIe without interfering with auxiliary memory. PRODOS™ is fully supported, and the card is APPLESOFT™ compatible. Installation software and long-life lithium battery are included. designed by Chuck Shaffer

\$79.50

SWITCH-A-SLOT

The SWITCH-A-SLOT is an expansion chassis, which allows the user to plug in up to four peripheral cards in one slot. One of these cards is selected for use, and only that card draws power.

\$179.50

SWITCH-A-SLOT and EXTEND-A-SLOT work well with most slow to medium speed cards. They are not recommended for high speed data transfer devices.

EXTEND-A-SLOT

The EXTEND-A-SLOT brings a slot outside your APPLE™, allowing an easy change of cards.

\$34.95

9-16 Adapter for APPLE IIe & IIc

This permits the use of most 16-pin I/O devices with the APPLE IIe or IIc. The only limitations are those devices that use the annunciators or the \$C040 strobe. NOTE: The IIc does not support the use of two joysticks.

\$14.95

16-9 Adapter for APPLE II and II+

With this adapter, owners of early APPLES can take advantage of the newer 9-pin game products, such as joysticks, MUPPET LEARNING KEYS™, etc.

\$14.95

BOOKS BY JIM SATHER

Understanding the APPLE II - The definitive source of information about how the APPLE II works. Foreword by Steve Wozniak.

\$22.95

Understanding the APPLE IIe - This companion volume covers the additional information needed to know details of the computer hardware.

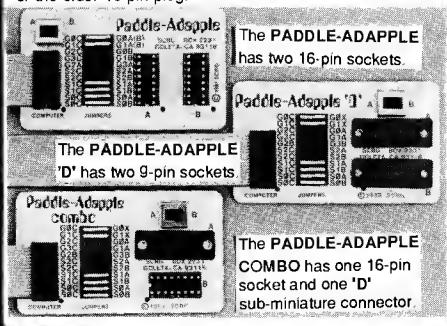
\$24.95

Paddle-Adapple

The PADDLE-ADAPPLE game expansion adapter plugs into the 16-pin interior game I/O socket, and allows you to select between one of two devices, or use two joysticks for games such as ARCHON™ and ONE-ON-ONE™.

\$29.95

There are three versions to adapt to any combination of the newer type APPLE connector (the 9-pin D sub-miniature), or the older 16-pin plug.



SIX MONTH WARRANTY

TEN DAY TRIAL

TOLL-FREE ORDER LINES

From California (800) 821-0774

Rest of U.S. (800) 635-8310

Outside of U.S. or for information, call (805) 529-2082

SHIPPING CHARGES: U.S. & Canada \$2.50

Other countries SWITCH-A-SLOT \$10 surface, \$25 air.

Other items \$5 surface, \$10 air.

at your local dealer or direct from:
**SOUTHERN CALIFORNIA
RESEARCH GROUP**

Post Office Box 593-1 Moorpark, CA 93020

Telex 658340-SCRG (Intertel SNC)

VISA, MASTERCARD ACCEPTED

APPLESOFT ADVISER

Program listing. Scrambler.

```
5 REM SCRAMBLER - INCIDER (8/86)
6 REM LETTER SCRAMBLING PROGRAM
10 HOME
20 PRINT "PRESS ANY KEY TO START..."
30 R = RND (1)
40 X = PEEK (- 16384)
50 POKE - 16368, 0
60 IF X < = 127 THEN GOTO 30
100 DIM K(10)
110 FOR I = 1 TO 10
120 K(I) = 0
130 NEXT I
140 HOME
150 PRINT "ENTER THE WORD TO BE SCRAMBLED..."
160 INPUT Z$
170 A = LEN (Z$): Y$ = ""
180 IF A > 10 THEN PRINT "TOO MANY CHARACTERS.": PRINT : GOTO 300
190 FOR J = 1 TO A
200 R = INT (RND (1) * A + 1)
210 IF K(R) < > 0 THEN GOTO 200
220 Y$ = Y$ + MID$ (Z$, R, 1)
230 K(R) = 1
240 NEXT J
250 PRINT " SCRAMBLED: ";
260 PRINT Y$
270 PRINT
300 PRINT " AGAIN? (Y/N) "
310 INPUT R$
320 IF R$ = "Y" THEN GOTO 110
330 IF R$ < > "N" THEN GOTO 300
340 END
```

D\$ = "HAPPY NEW YEAR"
PRINT LEN(D\$)

the computer displays the number 14, since there are 14 characters in the text D\$ contains.

Scrambler also uses the MID\$ function, which lets you extract a specific portion of a string. You must name the string on which you want to operate, specify the point at which the operation should begin, and specify the number of characters you want MID\$ to extract. Enter the two commands in the previous paragraph, then these two additional commands:

X\$ = MID\$(D\$, 7, 5)
PRINT X\$

The computer displays NEW Y. The MID\$ command operated on the text stored in D\$ (HAPPY NEW YEAR). It began the operation at the seventh character, N, and took out five characters, counting the space: NEW Y. This new text was stored in memory as X\$.

As you can see, the MID\$ function is useful for chopping strings into little pieces. Scrambler uses this function in line 220:

220 Y\$ = Y\$ + MID\$(Z\$, R, 1)

Z\$ is the word to be scrambled; R

is a randomly generated number that selects the character in the word to be pulled out next; and the number 1 tells the computer to pull out only a single character.

Line 220 also uses BASIC's *string-concatenation operator*, the plus sign. When used with text information, the plus sign tells the computer to attach the text that appears on the right side of the sign to the end of the text that appears on the left side. So if A\$ = "HAPPY" and if B\$ = "BIRTHDAY", the command

PRINT A\$ + " " + B\$

will display HAPPY BIRTHDAY.

Similarly,

X\$ = A\$ + " " + B\$

will store the combined expression as X\$.

In Scrambler, line 220 appears inside a loop. The program initializes Y\$ to null (Y\$ = "") in line 170 before entering the loop. Inside the loop, the computer randomly selects one character from the original word and attaches it to the end of the current string Y\$ contains. Thus Y\$ grows one character at a time, from a string having no characters at all to

one that contains all the characters in the original string, but with the order totally scrambled.

The Randomizer

Scrambler uses Applesoft BASIC's random-number generating function, RND, to randomly select which character to extract next from the original word. RND(1) generates a random number between zero and one (not including zero or one). Since you're probably interested in using RND to generate a random integer (whole number) between one and some maximum value, you must use the form

R = INT(RND(1) * A + 1)

where A contains the maximum value you want your program to generate. The variable R stores the result. Note that this equation is exactly what you see in line 200 of Scrambler. Line 170 calculates the value of A as the length of the string to be scrambled.

The RND function has one disturbing characteristic, though. Each time you run the program, the RND function begins generating the same list of random numbers. This means that if you enter the word DICTIONARY as the first word to be scrambled each time you run the program, you'll always get the same scrambled form (INYDCITORA, for example). The first ten random numbers the computer generates will always be the same each time you run the program.

To avoid this problem, Scrambler uses a technique that works well on the Apple //e system. Lines 10-60 use the X = PEEK(-16384) command to set up a timing loop that looks for a keyboard entry and assigns a value between 128 and 255 to X, depending on which key has been pressed. If no key is pressed, X is given a value between zero and 127. Line 50 resets the keyboard scanner. Line 60 checks the value of X; if it's less than or equal to 127, no key has been pressed, and the computer cycles through the loop again.

The randomizing trick lies in line 30. Each time the computer cycles through the loop, it generates a new random number. So if you wait 4.55 seconds after starting the program before you press a key to end the cycle, the computer might generate, say, 107 random numbers. The first random number used during scrambling will be the 108th one in Applesoft's list.

Computer Network

CALL TODAY 1-800-621-0937

**FREE Updates on Ramcard Software* • FREE 64k on 256k & 512k Ile Ramcards*
10 DAY 100% MONEY BACK GUARANTEE ON ANY HARDWARE PRODUCT***

*In 10 days of receipt we will refund your money if you're not 100% satisfied with any hardware product shipped to you, (less shipping).

BUSINESS

ASCII Express ProDOS/DOS	ea	77.95
Bank Street Mailer		40.99
Bank Street Writer 64K/128K	ea	40.99
Bank Street Speller		40.99
Bank Street Filer 64K/128K	ea	40.99
BPI GA,AR,AP,PAY Pro	ea	208.95
Bookends ProDOS-2C/2E-128		64.95
CrossTalk		109.00
dBase II (Req CP/M 80)		289.00
Dollars & Sense (Ile/1le-128K)		67.95
Fontrix		63.00
Format II Enhanced 64K or 128K	ea	86.50
Manage Your Money		102.00
MouseWrite 2C/E-ENH 128		72.00
Merlin Pro 2C/2E-128K		64.95
PFS 1st Success F/R/W Pro-128K		126.00
PFS File & Report	ea	68.50
PFS: Graph		68.50
PFS Write ProDOS-2C/2E-128K		68.50
ProFILER		68.95
Sideways Pro DOS		CALL
Sideways Dos 3.3		32.00
Supercalc 3a 2C/2E ENH		98.95
The Handlers Package		95.00
The Graphics Department		65.00
Think Tank		84.95
VIP Professional //e//c -256K		149.95
Word Perfect		98.00
Word Juggler III		159.95
Your Personal NetWorth		50.00

APPLEWORKS

Appleworks II+ Modifer 128k.		47.95
AutoWorks		27.95
FontWorks		37.95
Graphworks		55.95
HabaMerge		48.50
Haba Templates		19.95
Jeewee (REQ Clock)		34.95
MacroWorks New!		22.95
Megaworks		68.95
Pinpoint 2C/2E-ENH 128K ProDOS		34.95
Pinpoint Tool Kit		25.95
Pinpoint Pop-up Speller Checker		34.95
Pinpoint Print Enhancement		13.95
Pinpoint & Pop-up Speller		72.95
Quicken (New)		52.95
Reportworks		68.95
Sensible Speller DOS or ProDOS	ea	71.00
Sensible Grammar		59.95
SpellWorks		28.95
ThinkWorks (New)		95.00

HOME-HOBBY

Basic Building Blocks		24.00
Choplifter		22.89
Copy II		22.50
Dazzle Draw (Imagewriter II compat)		35.15
Deadline		28.50
Deluxe Music Construction		25.00
Enchanter		23.45
Fantavision (Req. Mouse/Color mon.)		28.95

HOME-HOBBY

F-15 Strike Eagle		20.50
Flight Simulator II		29.95
GATO		20.95
Graphics Expander Req. Printshop		23.95
Home Accountant		39.00
King's Quest II VII (C/E-128K)	ea	29.30
Lode Runner		20.50
Millionaire		24.00
Mind Prober		33.95
Newsroom +E/C		30.50
Newsroom clip art 1		16.25
One on One		24.95
Pinball Construct		25.00
Printshop +C/E		26.75
Printshop GL 1.2.3	ea	14.25
Printshop Refill		12.25
Printshop Companion		22.50
Sargon III (II, Mac)		29.30
Seven Cities-Gold		25.50
Silent Service		24.95
Skyfox		25.50
Super Zaxxon		19.50
Star Trek-Kobayashi		24.50
Turbo Pascal (Req. CP/M)		35.95
Turbo Toolbox		30.00
Shadowkeep		27.49
Summer Games		24.00
Take 1		38.89
Ultima III / IV		34.95
UniDOS (use DOS 3.3 on Unidisk 3.5)		29.95
Winter Games		24.00

EDUCATION

Early Games for Young Children		16.00
Master Type		23.45
Math Blaster		29.30
Typing Tutor III		29.30
Word Attack		29.30
Speed Reader II		41.00
Mission Algebra		28.00
Turtle Tracks		24.00
Spinaker Full Line		\$CALL
Stickybear ABC/#s/Math/etc	ea	24.00
Where is Carmen San Diego?		24.25
Algebra I thru IV	ea	26.95
Algebra V & VI		34.95
Alphabet Zoo		18.95
Fraction Fever		17.95
Visible Computer 6502		37.95
Spell It		28.69
Snooper Troops 1 or 2		22.95
Rocky's Boots		31.95
Trains		20.95
Spellicopter		24.00
Charlie Brown's ABC's		29.95
Snoopy's Rescue		29.95
Beneath Apple DOS		16.95
Beneath Apple Pro DOS		16.95
Story Maker		24.50
Alge-Blaster (Davidson & Assoc)		34.95
Turbo Tutor		24.95
Sticky Bear Reading		23.99

CHECKMATE TECHNOLOGIES

Multiram Ile 64k		\$ 119
Multiram Ile 320k		165
Multiram Ile 576k		205
Multiram Ile 768k		237
Multiram Ile 64k w/RGB		158
Multiram Ile 320k w/RGB		202
Multiram Ile 576k w/RGB		235
Multiram Ile 832k w/RGB		259
Multiram Ile 1 meg w/RGB		279
16 bit Microprocessor Ile		159
Multiram Ile 256k CX		179
Multiram Ile 512k CX		239
Multiram Ile CX kit 16 bit		129
Pascal RAM software		20
CP/M RAM software		20
256K Ram Chips 150ns		4
64k Ram Chips 200ns		.75
Call For Larger Memory Sizes		

DISKETTES

Elephant SS/DD		9.95
Elephant SS/DD		12.95
Verbatim SS/DD		15.95
Verbatim SS/DD		14.95
Verbatim DS/DD		16.00
Diskettes 3 1/2 SS/DD		24.95
Diskettes 3 1/2 DS/DD		29.95
Diskette Cleaner Kit 5.25		7.95
Disk Notcher (use both sides of disk)		9.95
Disk case (holds 10 Disks)		3.00
Diskette Carousel (holds 72) 5.25		15.95

RIBBONS

ImageWriter		3.95
Prowriter 8510		3.95
Epson FX/FX 80		3.95
Epson FX/FX 100		5.83
Epson LX-80		5.83
Okidata 192		6.65

OTHER RIBBONS CALL
COLOR RIBBONS CALL

PRINTERS

Epson LX-80		279.95
Epson FX-85 80 col.		419.95
Epson FX-266 136 col.		609.95
Epson LQ 1000 Ser. & Par.		759.95
Epson LQ 800 Ser. & Par.		619.95

HARDWARE

Amdek 300 12"		123.00
Cables for Modems & Printers	ea	24.95
Color 300		225.00
Color 600		399.00
RGB Interface		127.00
BusinessCard		145.00
Kraft Quick Stick		CALL
Grappler +		72.00
Serial Grappler		79.00
Buffered Grappler + 16K		131.50
Hot Link, S-P cable for /c		44.00
Grappler C		75.00
A-B switch Box 25pin		59.95
A-B Switch Box 36pin		99.95
Muppet Keys		44.00
Muppet Touch Tablet		75.00

HARDWARE

Koala Pad //e - //c		75.00
UltraTerm 132 Col. (II//Ile)		179.00
Mach III w/Fire (II//Ile)		32.25
Ile 80 Ram Card		55.95
System Saver		62.00
The Cricket //c		111.00
Thunderclock +		103.00
Disk Notcher		9.95
X-10 Powerhouse Interface Kit E/C		55.95

MODEMS

Hayes Smartmodem 1200		358.00
Hayes Smartmodem 300		132.00
Micromodem Ile w/Smartcom I		129.00
Hayes 2400 External Modem		577.00
Hayes 300 Baud Smartmodem //c		155.00

NO ADDITIONAL CHARGES FOR VISA & MASTERCARD ORDERS

For fast delivery send cashier's check, certified check or money order. Personal and company checks allow 15 days. Shipping - Software (\$3.00 min.). Shipping - Hardware (please call). Sorry No C.O.D.'s, School P.O.'s, Add 3% (\$3 min). Am. Ex. - 5%. NM Res. add 4.75% sales tax. Prices & availability subject to change without notice. All products are new and include factory warranty, therefore all software sales are final. We do not guarantee compatibility. Products purchased in error subject to 15% restocking fee. Defective merchandise replaced with same item only. Foreign add 18% (\$25 min). Not responsible for typographical errors. Mail Orders to COMPUTER NETWORK, 3204 NATL. PARKS HWY., CARLSBAD, NM 88220. To update your Multiram, RamWorks, & Z-RAM software Disk, please send a Diskette with a self stamped package for Return.

The next time you run the program, you might wait 5.7 seconds before pressing a key to continue the program. This time, the computer will generate perhaps 128 random numbers, so the 129th number in the list is used during the word scramble. Using this little routine before calling for a random number is about the best you can do toward truly randomizing your number sequences.

Not-So-Random Randomizing

If you've followed the program description to this point, you know that R is a randomly generated number between one and the number of characters in the string to be scrambled. But if R is truly random, what keeps a certain value from turning up more than once? For example, if the word to be scrambled, Z\$, is INCIDER, and R turns up as the number 3, then the letter C is pulled out for use in the scrambled word. What if R

comes up as 3 again? You can't have another C appear in the scrambled word.

A simple trick to keep track of the letters in the original word that have already been chosen is to define an array, K, as having ten elements:

100 DIM K(10)

This line gives the program ten separate variables for the program to use—K(1) through K(10). The computer gives each of these ten elements a value of zero in lines 110–130. Then, when a value for R is randomly generated during the scramble process (lines 190–240), the program checks the value for the corresponding array element, K(R) (line 210). If K(R) is still zero, the program then removes the R'th letter from the original string and adds it to the scrambled string (Y\$). It then gives K(R) a value of one (line 230), and loops back to generate another value for R to select another letter. If a value for R is generated for which K(R) = 1 already, the computer loops back to generate a new random value.

Conclusion

The rest of the program is fairly straightforward. If you want to scramble words that are longer than ten characters, change the value 10 that appears in lines 100, 110, and 180 to whatever new value you want to use.

When you see how simple this program is, you might ask if a simple "unscrambler" program could be written as well. Unfortunately, this is one case in which it's easy to work in one direction but not in the other. In the first place, the computer could never "know" when a given combination of letters might correspond to a valid word. The program would have to display all possible combinations and leave the decision up to you. But the number of permutations for a word with only six letters is 720 ($6 \times 5 \times 4 \times 3 \times 2 \times 1$); for a ten-letter word, the number of possibilities is 3,628,800!

To carry out this task efficiently, a program would need recursive subroutines—that is, subroutines that can call themselves—and BASIC handles recursion awkwardly, to say the least. Pascal would be a better choice for an unscrambler program, but for words of any length, the task still remains impractical. ■

UPTIME

• THE DISK MONTHLY •
Get 120 programs for less than 60¢ each!

Make your life easier and get more from your computer.

Organize your life and be more productive with our home management and finance programs. Have fun learning with educational programs and fun relaxing with games and adventures. You'll find business, graphics, utilities and more!

Ten programs and more on every disk—a wealth of information. **Subscribe now!**

Make the very next disk yours! Fill in the coupon and return it to us.

We make it easy and inexpensive—a disk each month.

For Immediate Service Call Us Toll-Free:
1-800-437-0033
In Rhode Island: 1-401-849-4926

I'LL BYTE!!! I'm a computer enthusiast who wants more. Please start my subscription to UPTIME immediately. I want:

12 Disk Issues

\$66

6 Disk Issues

\$48

3 Disk Issues

\$30

1 Disk Issue

\$11.95

(Add \$2 per issue in foreign countries, except Canada and APO)

Name _____

Address _____

City _____

State _____ Zip _____

Please send my free **Mall Magic** disk.

Payment enclosed. (Please make checks payable to UPTIME.)

Bill my: VISA MASTERCARD

Account No. _____ Expiration Date _____

Signature _____

Please send information on UPTIME for Macintosh.

Send to: UPTIME, PO BOX 299, NEWPORT, RI 02840.

Subscribe now and save. You won't believe the value! Satisfaction guaranteed.



Free Offer!

Take advantage of this introductory offer! Subscribe and receive **Mall Magic** FREE! Add, edit, or delete names and addresses; sort by name, city, state or zip; print labels and more. Yours with any purchase below.

Write to Dan Bishop at 4124 Beaver Creek Drive, Fort Collins, CO 80526.

**30%
SAVINGS**
off cover price

A one year subscription (12 monthly issues) at the low, rate of \$24.97! Save over \$10.00 off the newsstand rate.

Apple is a registered trademark of Apple Computer, Inc.

inCider—The Apple II Journal—the best in software and hardware reviews, entertainment, education and answers to your most pressing questions.



UNCONDITIONAL GUARANTEE

If inCider doesn't prove to be everything we say it is, just tell us. We'll refund your money for all undelivered issues—no questions.

Add to your computing skills with monthly features like:

- Off-the-shelf solutions to your computing needs.
- Reader interaction for more user-friendly information.
- An ongoing course on Applesoft Basic language.
- Special articles to increase your personal productivity.
- Ready to run program listings.

**30%
SAVINGS**

YES! I want a one year subscription (12 issues) for only \$24.97.

inCider

Send me 12 issues of inCider for \$24.97. I save 30% off the cover price.

24 issues for \$38.00. Save 46% off the cover price.

Payment enclosed Bill me

Please make checks payable to inCider.

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only, US funds drawn on US banks. Foreign Surface \$44.97, 1 year only, US funds drawn on US banks. Foreign Airmail, please inquire. Please allow 6-8 weeks for delivery.

368B5E

**30%
SAVINGS**

YES! I want a one year subscription (12 issues) for only \$24.97.

inCider

Send me 12 issues of inCider for \$24.97. I save 30% off the cover price.

24 issues for \$38.00. Save 46% off the cover price.

Payment enclosed Bill me

Please make checks payable to inCider.

Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only, US funds drawn on US banks. Foreign Surface \$44.97, 1 year only, US funds drawn on US banks. Foreign Airmail, please inquire. Please allow 6-8 weeks for delivery.

368B5E

**30%
SAVINGS**

YES! I want a one year subscription (12 issues) for only \$24.97.

inCider

Send me 12 issues of inCider for \$24.97. I save 30% off the cover price.

24 issues for \$38.00. Save 46% off the cover price.

Payment enclosed Bill me

Please make checks payable to inCider.

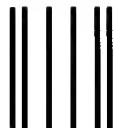
Name _____

Address _____

City _____ State _____ Zip _____

Canada & Mexico \$27.97, 1 year only, US funds drawn on US banks. Foreign Surface \$44.97, 1 year only, US funds drawn on US banks. Foreign Airmail, please inquire. Please allow 6-8 weeks for delivery.

368B5F



BUSINESS REPLY MAIL

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
PO Box 911
Farmingdale, NY 11737



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

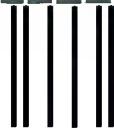


BUSINESS REPLY MAIL

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
PO Box 911
Farmingdale, NY 11737



BUSINESS REPLY MAIL

First Class Permit No. 73 Peterborough, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

CW Communications/Peterborough
inCider
PO Box 911
Farmingdale, NY 11737



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



**30%
SAVINGS**
off cover price

A one year subscription (12 monthly issues) at the low, rate of \$24.97! Save over \$10.00 off the newsstand rate.

inCider—The Apple II Journal—the best in software and hardware reviews, entertainment, education and answers to your most pressing questions.



UNCONDITIONAL GUARANTEE

If **inCider** doesn't prove to be everything we say it is, just tell us. We'll refund your money for all undelivered issues—no questions.

Add to your computing skills with monthly features like:

- Off-the-shelf solutions to your computing needs.
- Reader interaction for more user-friendly information.
- An ongoing course on Applesoft Basic language.
- Special articles to increase your personal productivity.
- Ready to run program listings.

RIGHT OF ASSEMBLY

Machine-Language Addressing Modes

"We've worked our magic simply by manipulating the contents of those 64,000 memory locations."



by Roger Wagner

Flexibility in addressing the Apple's individual memory locations is the key to greater power in your programs. The various addressing modes available on the Apple are fundamental to machine-language programming, and you might justifiably wonder why we haven't covered them sooner. Well, as it happens, we have—I just didn't call them by name at the time.

In the first installment of Right of Assembly (October 1985, p. 68), we laid out the basic structure of 64,000 individual memory locations. Over the last few months, we've worked our magic simply by manipulating the contents of those locations.

Addressing Modes

The **Table** lists each addressing mode with an example. All but the last three examples should be familiar to you—each of them appeared in programs previously presented in this column.

You use the *immediate* mode to load a specific value into a register, indicated in most assemblers by the pound sign (#) preceding the value you want to load. This contrasts with the *absolute* mode, in which you retrieve a value from a given memory location. In absolute mode, you specify the exact address in which you're interested.

Zero page is basically just a variation of absolute mode. The main difference is in the number of bytes in the coding: The general case takes 3, while zero-page addressing requires only 2.

The *Implicit* (or *implied*) instruction is the most compact, in that it uses only

1 byte. The TAY command (transfer accumulator to the Y register) needs no additional address bytes, because the source and destination of the data are implied in the instruction itself.

Relative addressing is done relative to the point at which you find the first byte of the instruction itself. Although the example in the **Table** interprets it as a branch to a specific address, the actual hex code is merely a plus or minus displacement from the branch point.

You can create quite a variety of programs with these five instructions, as I hope you've been doing on your own. But programs created with these modes are rather inflexible in dealing with data from the outside world (such as in input routines), or when you want to access tables or large blocks of data.

Indexed Addressing

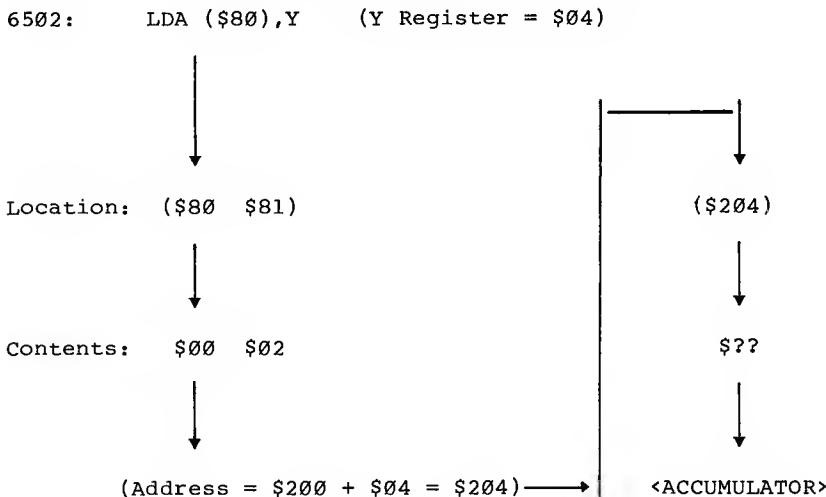
For more flexibility you can use *indexed* addressing, in which you add the contents of the X or Y register to the address given in the instruction to determine the final address. In the example given in the **Table**, if the X register holds a zero, the contents of location \$200 are loaded into the accumulator. If the X register holds a 04, then location \$204 is accessed. The usefulness in accessing tables is obvious.

A problem arises, though, when you want to access a table that grows or shrinks dynamically as the data within it change. Another problem occurs when the table grows larger than 256 bytes, since the maximum offset possible using the X or Y register is 255.

Table. Machine-language addressing modes.

Addressing Mode	Example	Hex Bytes
Immediate	LDA #\$A0	A9 A0
Absolute	LDA \$7FA	AD FA 07
Zero Page	LDA \$80	A4 80
Implicit/Implied	TAY	A8
Relative	BCC \$3360	90 0F
Indexed	LDA \$200,X	BD 00 02
Indirect Indexed	LDA (\$80,X)	A1 80
Indexed Indirect	LDA (\$80),Y	B1 80

Figure 1. Indirect-indexed addressing.



The *indirect-indexed* mode provides a really elegant solution to these problems. First, the 6502 goes to the given zero-page location (the base

address must be on zero page). In the example shown in **Figure 1**, the computer goes to \$80 and \$81 to get the low- and high-order bytes of the

address stored there, then adds the value of the Y register to that address.

These 2-byte zero-page address pairs, often called *pointers*, are frequently used in Apple programming. In fact, Applesoft uses quite a number of these byte pairs. You can use them to keep track of all sorts of continually changing things, such as where the program is, the locations of strings and other variables, and many other nifty items.

To simulate the LDA \$200,X command with indirect mode, you first store a #\$00 in \$80 and a #\$02 in \$81 (00 and 02 are the low- and high-order bytes of the address \$200), then use the command LDA (\$80),Y. You've probably noticed that I used the X register in one case and the Y register in the other. It turns out that the X and Y registers can't always be used interchangeably. The difference lies in which command (LDA or STX, for instance) and addressing mode you use. As it happens, you can do indirect-indexed

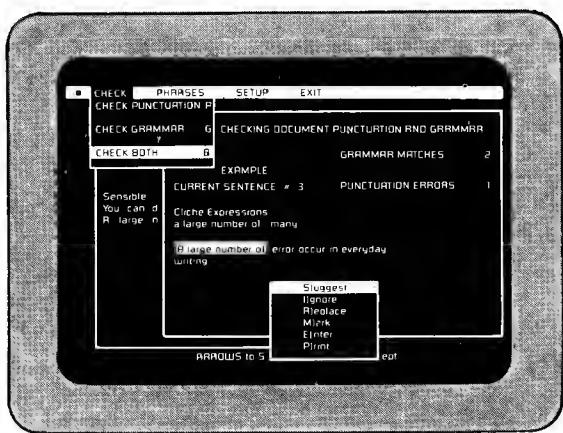
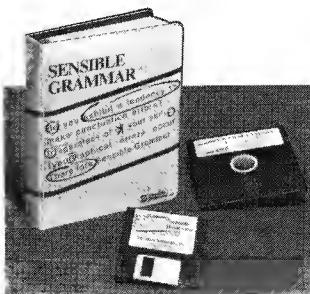
Here's How to Screen Your Grammatical Errors

Sensible Grammar saves you embarrassment and improves your credibility by helping you screen out the grammatical errors in your papers. And it's easy to use on your Apple II computer because it is AppleMouse compatible and has Macintosh-like screens.

Possible mistakes are shown to you in context, a replacement word or phrase is suggested, and you are then given the option to accept or reject the suggested correction.

Sensible Grammar does much more than catch bad grammar. It also...

- checks your capitalization and punctuation, as well as the spelling of abbreviations;
- searches out phrases that are inconcise, vague, wordy, faulty or repetitive;
- points out expressions that are informal, pompous or sexist;
- calls attention to cliches, slang and trite language;
- allows entry of your personal hackneyed expressions and then lets you know every time you use them.



Sensible Grammar™

for your Apple 128K //e and //c computer is available for \$99.95.

AppleWorks Compatible!

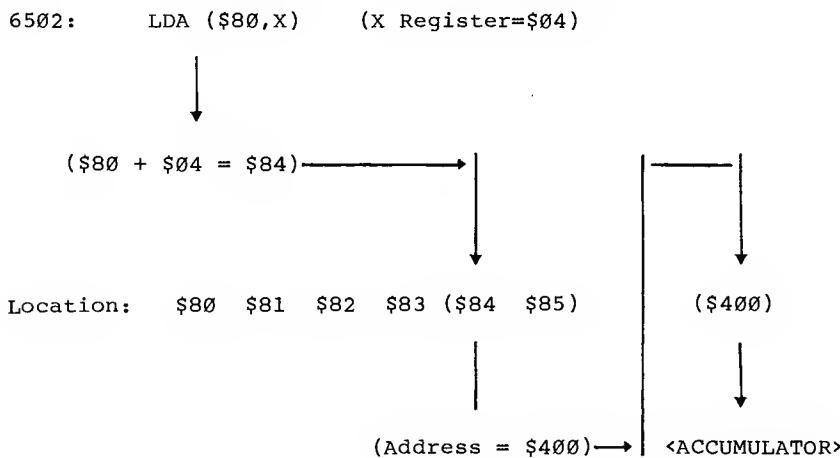
*Sensible Grammar works with the following word processors. AppleWorks, AppleWriter-ProDOS version (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware); Mouse Write text files (Roger Wagner Publishing); MouseWord (International Solutions); PFS:WRITE-ProDOS (Software Publishing, Inc.); Word Juggler (Quark Inc.); WordPerfect (SSI Software); Zardax-ProDOS (Computer Solutions) and others. Owners of trademarks indicated in parentheses.



**Sensible
Software, Inc.**

210 S. Woodward, Suite 229, Birmingham, MI 48011
(313) 258-5566

Figure 2. Indexed-indirect addressing.



addressing only with the Y register. To find out what's legal, refer to one of the many books on machine-language programming, or look for a chart in your *Apple Reference Manual*.

The last addressing mode, *indexed indirect* (see **Figure 2**), is probably the most unusual. In this case, you add the contents of the X register (you can't use Y for this mode) to the

base address *before* getting the contents. If the X register held a zero, an LDA (\$80,X) would go to \$80 and \$81 for the 2-byte address, and then load the accumulator with the contents of the indicated location. If, instead, the X register held a 04, the memory address would be determined by the contents of **\$84 and \$85!**

Usually, you load the X register with multiples of two to access a series of continuous pointers in zero page.

Using Directives

Before you can put all this new information to work, you need to answer one more question: How do you store just pure data within a program? All the commands covered so far are actual commands for the 6502; there's no data command as such. What is available, though, are the *pseudo-ops* or assembler *directives* of your particular assembler. Directives are commands the assembler itself uses (such as ORG and EQU) to control aspects of the final object

MacroWorks™ makes AppleWorks work the way it should have in the first place.

New word processing power

MacroWorks streamlines AppleWorks word processing with a multitude of new features. For example, one quick keystroke now deletes the *character* or the *word* at the cursor.

Return to our ~~new~~ office: Macro lets you type almost anything with just one keystroke.

Harvey R. Smith
6502 Disk Drive
Uptown, CA 92103

Use one keystroke* to jump to the start or end of a line of text. Another keystroke will erase an entire line. Change your mind? Apple-U will instantly "Undo" your last delete command!

AppleWorks Macros

MacroWorks will convert any series of keystrokes into a new one keystroke AppleWorks command. Use MacroWorks' built-in macros, or define your own. For example, make Apple-N type your name and address. Or let Apple-X Save or Print *all* of your desktop files, nonstop.

For AppleWorks' Word Processor, Data Base and Spreadsheet

The possibilities are endless. For example, you may want to skip unwanted questions like "How many copies?" and "Are you sure...?". Or search and replace printer commands (change all underlined words to bold, etc.).

* These are Solid-Apple commands. All original commands stay intact.

Boot AppleWorks and go

MacroWorks is *not* a time-consuming "pre-boot" disk. You boot AppleWorks like you always do, but now you've got MacroWorks' new features!

Customized Help!

MacroWorks lets you replace AppleWorks' Help screens with new information, like a list of new commands or important names and addresses.



Beagle Bros
MICRO SOFTWARE

3990 Old Town Avenue, San Diego, California 92110
MacroWorks requires AppleWorks and an Apple IIc or 128K IIe.
AVAILABLE AT MOST SOFTWARE STORES or by mail:
Visa, MasterCard or COD orders, phone toll free
1-800-227-3800 ext. 1607

Multi-Column Printouts!

MacroWorks' *Galley* program prints your AppleWorks word processing files in side-by-side columns (two or three-wide) for faster and easier newsletter layouts.

Analyze your files

MacroWorks' *File Analyzer* program prints a sorted list of every word it finds, and reports the number of occurrences of each word, and the average word length. Great for making an index or glossary, or for analyzing your writing style.

• COUNT WORD	•
• 10 A	•
• 1 ADDRESS	•
• 1 ADDRESSES	•
• 6 ALL	•
• 1 ALMOST	•
• 1 ALWAYS	•

• 1 WORK	•
• 1 WRITING	•
• 9 YOU	•
• 1 YOU'VE	•
• 8 YOUR	•

• TOTAL WORDS: 402	•
• CHARACTERS : 2013	•
• CHARS/WORD : 5.0	•

Alphabetize your catalogs

MacroWorks' *Alpha-Cat* program prints a sorted list of all the files (or just the AppleWorks files) on a disk. Perfect for disk I. D. labels!

\$34.95 Friendly and unprotected

MacroWorks is easy-to-use, unprotected and compatible with all Apple IIc's and 128K IIe's. Like all Beagle Bros disks, you can make backups without hassle or special software.

Apple, AppleWorks and ProDOS are trademarks of Apple Computer, Inc.

RIGHT OF ASSEMBLY

Listing 1. Sample data program.

```

1  ****
2  *      SAMPLE DATA PROGRAM      *
3  *      8/1/86                      *
4  *      MERLIN ASSEMBLER          *
5  ****
6  *
7  *      ORG  $300
8  *
9  COUT  EQU  $FDED
10 *
11 START LDX  #$00      ; START WITH X = 0
12 LOOP  LDA  DATA,X    ; READ A BYTE OF
13          ; DATA
14          ; PRINT ASCII
15          ; CHARACTER
16          ; X = X + 1
17          ; DONE WITH LIST?
18          ; X < 5 MEANS NO...
19          ; #$8D = CARRIAGE
20          ; RETURN
21          ; PRINT IT
22          ; DATA = 'APPLE'
23          ; DATA = 'APPLE'

```

Listing 2. Listing 1 disassembled.

```

*300L
0300-  A2 00      LDX  #$00
0302-  BD 0E 03    LDA  $030E,X
0305-  20 ED FD    JSR
0308-  E8          INX
0309-  E0 05      CPX  #$05
030B-  90 F5      BCC  $0302
030D-  60          RTS
030E-  C1 D0      CMP  ($D0,X)
0310-  D0 CC      BNE  $02DE
0312-  C5 00      CMP  $00

```

code during source-listing assembly. Directives vary from one assembler to another, so you'll have to consult your own manual to see how your assembler operates.

Generally, you define a block of one or more bytes of data, then just skip over that block with a branch or jump instruction when you execute your program. You can usually enter data either as hex bytes, or as the ASCII characters you want to use. In that case, the assembler automatically translates the ASCII characters into the proper hex numbers.

Almost all assemblers have a HEX command for directly entering the hex bytes of a data table. **Listing 1** is a sample program that uses the indexed-address mode. This disassembles from the Monitor with a 300L as shown in **Listing 2**.

Listing 2 is an improved version of **Listing 1**, which prints the word APPLE on screen. It uses the indexed-address mode to scan through the data table to print the word APPLE. Notice that when disassembling, data tables can be strangely interpreted to the screen. The Apple has no way of knowing which part of the listing is data and which contains intended 6502 instructions, so tries to list it all as an ordinary machine-language program.

Listing 2 uses the offset of the X register to get successive items from the data table. When the X register reaches 05 (the number of items in the table), you're finished printing and terminate with a carriage return. Remember that in machine language, you must usually do everything yourself; you can't assume an automatic carriage return at the end of a printed string.

Attention all FX80, FX100, JX, & RX owners: You already own half of a great printer



Now
Only
\$79.95

Now for \$79.95 you can own the rest. You see, today's new dot matrix printers offer a lot more.

Like an NLQ mode that makes their letters print almost as sharp as a daisy wheel. And font switching at the touch of a button —

in over 160 styles. But now, a Dots-Perfect upgrade kit can make your printer work like the new models in minutes. At a fraction of their cost.

Call now and use your Visa or Master Card. Don't replace your printer, upgrade it!

1-800-368-7737

In California: 1-800-831-9772



Sample of
letter with
Dots-Perfect

Dots-Perfect

 Dresselhaus

Sample of
letter without
Dots-Perfect



EPSON is a trademark of
EPSON America, Inc.

837 E. Alosta Ave., Glendora, CA 91740 Tel: (818) 914-5831
An upgrade kit for EPSON FX, JX and RX printers

Not Piracy...



Read
Hardcore COMPUTIST
& get step-by-step instructions
on how to move your
uncopyable software to
normal disks so you can:

- Make backups for your expensive software more easily
- Move programs from floppy to hard disk
- Add custom modifications such as fast DOS to speed up LOADs & SAVEs

Also get: Adventure Tips, Advanced Playing Techniques (APT's), parameters, and more...

Just Good Sense!

If you're a vigorous Apple computist you can't afford to be without us any longer!

Subscription Rates (6 issues)

U.S. \$20 U.S. First Class \$24
 Canada, Mexico \$34 Other Foreign \$60
 Sample - U.S. \$4.75 ea. Foreign \$8.00 ea.
 Book of Softkeys Vol. 1 (157 pages)
 U.S. \$20 ea. All Foreign \$24 ea.
 (Washington State Book orders add 7.8%)

<input type="checkbox"/> New Subscriber	<input type="checkbox"/> Renewal	<input type="checkbox"/> Sample
Book of Softkeys Vol. 1		
Address _____	State _____	Zip _____
Country _____	Phone _____	Exp. _____
Signature _____		
<input type="checkbox"/> Send orders to: COMPUTIST , P.O. Box 110846-1, Tacoma, WA 98411 U.S. Funds drawn on U.S. Bank		

Listing 3. Screen-clear program.

```

1  ****
2  *      SCREEN CLEAR PROGRAM #1A *
3  *      8/1/86
4  *      MERLIN ASSEMBLER
5  ****
6  *
7  ORG $300
8  *
9  PTR EQU $06
10 *
11 ENTRY LDA #$04 ; HIGH ORDER BYTE OF
12           $400
13 STA PTR+1 ; SET HIGH BYTE OF
14           PTR
15 LDY #$00 ; LOW ORDER BYTE OF
16           $400 AND Y = 0
17           STY PTR ; SET LOW BYTE OF
18           PTR
19           * SETS PTR (6,7) TO $400
20           *
21           START LDA #$A0 ; ASCII FOR 'SPACE'
22           CHARACTER
23           LOOP STA (PTR),Y ; PUT 'SPACE' IN
24           MEMORY
25           INY ; Y = Y + 1
26           BNE LOOP ; BRANCH WHILE Y =
27           $1 TO $FF
28           INC PTR+1 ; PTR GOES FROM $400
29           TO $500
30           CMP #$08 ; STOP WHEN PTR =
31           $800
32           BCC START ; NOT THERE YET
33           RTS
34           *
35           *
36           *
37           *
38           *
39           *
40           *
41           *
42           *
43           *
44           *
45           *
46           *
47           *
48           *
49           *
50           *
51           *
52           *
53           *
54           *
55           *
56           *
57           *
58           *
59           *
60           *
61           *
62           *
63           *
64           *
65           *
66           *
67           *
68           *
69           *
70           *
71           *
72           *
73           *
74           *
75           *
76           *
77           *
78           *
79           *
80           *
81           *
82           *
83           *
84           *
85           *
86           *
87           *
88           *
89           *
90           *
91           *
92           *
93           *
94           *
95           *
96           *
97           *
98           *
99           *
100          *
101          *
102          *
103          *
104          *
105          *
106          *
107          *
108          *
109          *
110          *
111          *
112          *
113          *
114          *
115          *
116          *
117          *
118          *
119          *
120          *
121          *
122          *
123          *
124          *
125          *
126          *
127          *
128          *
129          *
130          *
131          *
132          *
133          *
134          *
135          *
136          *
137          *
138          *
139          *
140          *
141          *
142          *
143          *
144          *
145          *
146          *
147          *
148          *
149          *
150          *
151          *
152          *
153          *
154          *
155          *
156          *
157          *
158          *
159          *
160          *
161          *
162          *
163          *
164          *
165          *
166          *
167          *
168          *
169          *
170          *
171          *
172          *
173          *
174          *
175          *
176          *
177          *
178          *
179          *
180          *
181          *
182          *
183          *
184          *
185          *
186          *
187          *
188          *
189          *
190          *
191          *
192          *
193          *
194          *
195          *
196          *
197          *
198          *
199          *
200          *
201          *
202          *
203          *
204          *
205          *
206          *
207          *
208          *
209          *
210          *
211          *
212          *
213          *
214          *
215          *
216          *
217          *
218          *
219          *
220          *
221          *
222          *
223          *
224          *
225          *
226          *
227          *
228          *
229          *
230          *
231          *
232          *
233          *
234          *
235          *
236          *
237          *
238          *
239          *
240          *
241          *
242          *
243          *
244          *
245          *
246          *
247          *
248          *
249          *
250          *
251          *
252          *
253          *
254          *
255          *
256          *
257          *
258          *
259          *
260          *
261          *
262          *
263          *
264          *
265          *
266          *
267          *
268          *
269          *
270          *
271          *
272          *
273          *
274          *
275          *
276          *
277          *
278          *
279          *
280          *
281          *
282          *
283          *
284          *
285          *
286          *
287          *
288          *
289          *
290          *
291          *
292          *
293          *
294          *
295          *
296          *
297          *
298          *
299          *
300          *
301          *
302          *
303          *
304          *
305          *
306          *
307          *
308          *
309          *
310          *
311          *
312          *
313          *
314          *
315          *
316          *
317          *
318          *
319          *
320          *
321          *
322          *
323          *
324          *
325          *
326          *
327          *
328          *
329          *
330          *
331          *
332          *
333          *
334          *
335          *
336          *
337          *
338          *
339          *
340          *
341          *
342          *
343          *
344          *
345          *
346          *
347          *
348          *
349          *
350          *
351          *
352          *
353          *
354          *
355          *
356          *
357          *
358          *
359          *
360          *
361          *
362          *
363          *
364          *
365          *
366          *
367          *
368          *
369          *
370          *
371          *
372          *
373          *
374          *
375          *
376          *
377          *
378          *
379          *
380          *
381          *
382          *
383          *
384          *
385          *
386          *
387          *
388          *
389          *
390          *
391          *
392          *
393          *
394          *
395          *
396          *
397          *
398          *
399          *
400          *
401          *
402          *
403          *
404          *
405          *
406          *
407          *
408          *
409          *
410          *
411          *
412          *
413          *
414          *
415          *
416          *
417          *
418          *
419          *
420          *
421          *
422          *
423          *
424          *
425          *
426          *
427          *
428          *
429          *
430          *
431          *
432          *
433          *
434          *
435          *
436          *
437          *
438          *
439          *
440          *
441          *
442          *
443          *
444          *
445          *
446          *
447          *
448          *
449          *
450          *
451          *
452          *
453          *
454          *
455          *
456          *
457          *
458          *
459          *
460          *
461          *
462          *
463          *
464          *
465          *
466          *
467          *
468          *
469          *
470          *
471          *
472          *
473          *
474          *
475          *
476          *
477          *
478          *
479          *
480          *
481          *
482          *
483          *
484          *
485          *
486          *
487          *
488          *
489          *
490          *
491          *
492          *
493          *
494          *
495          *
496          *
497          *
498          *
499          *
500          *
501          *
502          *
503          *
504          *
505          *
506          *
507          *
508          *
509          *
510          *
511          *
512          *
513          *
514          *
515          *
516          *
517          *
518          *
519          *
520          *
521          *
522          *
523          *
524          *
525          *
526          *
527          *
528          *
529          *
530          *
531          *
532          *
533          *
534          *
535          *
536          *
537          *
538          *
539          *
540          *
541          *
542          *
543          *
544          *
545          *
546          *
547          *
548          *
549          *
550          *
551          *
552          *
553          *
554          *
555          *
556          *
557          *
558          *
559          *
560          *
561          *
562          *
563          *
564          *
565          *
566          *
567          *
568          *
569          *
570          *
571          *
572          *
573          *
574          *
575          *
576          *
577          *
578          *
579          *
580          *
581          *
582          *
583          *
584          *
585          *
586          *
587          *
588          *
589          *
590          *
591          *
592          *
593          *
594          *
595          *
596          *
597          *
598          *
599          *
600          *
601          *
602          *
603          *
604          *
605          *
606          *
607          *
608          *
609          *
610          *
611          *
612          *
613          *
614          *
615          *
616          *
617          *
618          *
619          *
620          *
621          *
622          *
623          *
624          *
625          *
626          *
627          *
628          *
629          *
630          *
631          *
632          *
633          *
634          *
635          *
636          *
637          *
638          *
639          *
640          *
641          *
642          *
643          *
644          *
645          *
646          *
647          *
648          *
649          *
650          *
651          *
652          *
653          *
654          *
655          *
656          *
657          *
658          *
659          *
660          *
661          *
662          *
663          *
664          *
665          *
666          *
667          *
668          *
669          *
670          *
671          *
672          *
673          *
674          *
675          *
676          *
677          *
678          *
679          *
680          *
681          *
682          *
683          *
684          *
685          *
686          *
687          *
688          *
689          *
690          *
691          *
692          *
693          *
694          *
695          *
696          *
697          *
698          *
699          *
700          *
701          *
702          *
703          *
704          *
705          *
706          *
707          *
708          *
709          *
710          *
711          *
712          *
713          *
714          *
715          *
716          *
717          *
718          *
719          *
720          *
721          *
722          *
723          *
724          *
725          *
726          *
727          *
728          *
729          *
730          *
731          *
732          *
733          *
734          *
735          *
736          *
737          *
738          *
739          *
740          *
741          *
742          *
743          *
744          *
745          *
746          *
747          *
748          *
749          *
750          *
751          *
752          *
753          *
754          *
755          *
756          *
757          *
758          *
759          *
760          *
761          *
762          *
763          *
764          *
765          *
766          *
767          *
768          *
769          *
770          *
771          *
772          *
773          *
774          *
775          *
776          *
777          *
778          *
779          *
780          *
781          *
782          *
783          *
784          *
785          *
786          *
787          *
788          *
789          *
780          *
781          *
782          *
783          *
784          *
785          *
786          *
787          *
788          *
789          *
790          *
791          *
792          *
793          *
794          *
795          *
796          *
797          *
798          *
799          *
800          *
801          *
802          *
803          *
804          *
805          *
806          *
807          *
808          *
809          *
8010          *
8011          *
8012          *
8013          *
8014          *
8015          *
8016          *
8017          *
8018          *
8019          *
8020          *
8021          *
8022          *
8023          *
8024          *
8025          *
8026          *
8027          *
8028          *
8029          *
8030          *
8031          *
8032          *
8033          *
8034          *
8035          *
8036          *
8037          *
8038          *
8039          *
8040          *
8041          *
8042          *
8043          *
8044          *
8045          *
8046          *
8047          *
8048          *
8049          *
8050          *
8051          *
8052          *
8053          *
8054          *
8055          *
8056          *
8057          *
8058          *
8059          *
8060          *
8061          *
8062          *
8063          *
8064          *
8065          *
8066          *
8067          *
8068          *
8069          *
8070          *
8071          *
8072          *
8073          *
8074          *
8075          *
8076          *
8077          *
8078          *
8079          *
8080          *
8081          *
8082          *
8083          *
8084          *
8085          *
8086          *
8087          *
8088          *
8089          *
8090          *
8091          *
8092          *
8093          *
8094          *
8095          *
8096          *
8097          *
8098          *
8099          *
80100          *
80101          *
80102          *
80103          *
80104          *
80105          *
80106          *
80107          *
80108          *
80109          *
80110          *
80111          *
80112          *
80113          *
80114          *
80115          *
80116          *
80117          *
80118          *
80119          *
80120          *
80121          *
80122          *
80123          *
80124          *
80125          *
80126          *
80127          *
80128          *
80129          *
80130          *
80131          *
80132          *
80133          *
80134          *
80135          *
80136          *
80137          *
80138          *
80139          *
80140          *
80141          *
80142          *
80143          *
80144          *
80145          *
80146          *
80147          *
80148          *
80149          *
80150          *
80151          *
80152          *
80153          *
80154          *
80155          *
80156          *
80157          *
80158          *
80159          *
80160          *
80161          *
80162          *
80163          *
80164          *
80165          *
80166          *
80167          *
80168          *
80169          *
80170          *
80171          *
80172          *
80173          *
80174          *
80175          *
80176          *
80177          *
80178          *
80179          *
80180          *
80181          *
80182          *
80183          *
80184          *
80185          *
80186          *
80187          *
80188          *
80189          *
80190          *
80191          *
80192          *
80193          *
80194          *
80195          *
80196          *
80197          *
80198          *
80199          *
80200          *
80201          *
80202          *
80203          *
80204          *
80205          *
80206          *
80207          *
80208          *
80209          *
80210          *
80211          *
80212          *
80213          *
80214          *
80215          *
80216          *
80217          *
80218          *
80219          *
80220          *
80221          *
80222          *
80223          *
80224          *
80225          *
80226          *
80227          *
80228          *
80229          *
80230          *
80231          *
80232          *
80233          *
80234          *
80235          *
80236          *
80237          *
80238          *
80239          *
80240          *
80241          *
80242          *
80243          *
80244          *
80245          *
80246          *
80247          *
80248          *
80249          *
80250          *
80251          *
80252          *
80253          *
80254          *
80255          *
80256          *
80257          *
80258          *
80259          *
80260          *
80261          *
80262          *
80263          *
80264          *
80265          *
80266          *
80267          *
80268          *
80269          *
80270          *
80271          *
80272          *
80273          *
80274          *
80275          *
80276          *
80277          *
80278          *
80279          *
80280          *
80281          *
80282          *
80283          *
80284          *
80285          *
80286          *
80287          *
80288          *
80289          *
80290          *
80291          *
80292          *
80293          *
80294          *
80295          *
80296          *
80297          *
80298          *
80299          *
80300          *
80301          *
80302          *
80303          *
80304          *
80305          *
80306          *
80307          *
80308          *
80309          *
80310          *
80311          *
80312          *
80313          *
80314          *
80315          *
80316          *
80317          *
80318          *
80319          *
80320          *
80321          *
80322          *
80323          *
80324          *
80325          *
80326          *
80327          *
80328          *
80329          *
80330          *
80331          *
80332          *
80333          *
80334          *
80335          *
80336          *
80337          *
80338          *
80339          *
80340          *
80341          *
80342          *
80343          *
80344          *
80345          *
80346          *
80347          *
80348          *
80349          *
80350          *
80351          *
80352          *
80353          *
80354          *
80355          *
80356          *
80357          *
80358          *
80359          *
80360          *
80361          *
80362          *
80363          *
80364          *
80365          *
80366          *
80367          *
80368          *
80369          *
80370          *
80371          *
80372          *
80373          *
80374          *
80375          *
80376          *
80377          *
80378          *
80379          *
80380          *
80381          *
80382          *
80383          *
80384          *
80385          *
80386          *
80387          *
80388          *
80389          *
80390          *
80391          *
80392          *
80393          *
80394          *
80395          *
80396          *
80397          *
80398          *
80399          *
80400          *
80401          *
80402          *
80403          *
80404          *
80405          *
80406          *
80407          *
80408          *
80409          *
80410          *
80411          *
80412          *
80413          *
80414          *
80415          *
80416          *
80417          *
80418          *
80419          *
80420          *
80421          *
80422          *
80423          *
80424          *
80425          *
80426          *
80427          *
80428          *
80429          *
80430          *
80431          *
80432          *
80433          *
80434          *
80435          *
80436          *
80437          *
80438          *
80439          *
80440          *
80441          *
80442          *
80443          *
80444          *
80445          *
80446          *
80447          *
80448          *
80449          *
80450          *
80451          *
80452          *
80453          *
80454          *
80455          *
80456          *
80457          *
80458          *
80459          *
80460          *
80461          *
80462          *
80463          *
80464          *
80465          *
80466          *
80467          *
80468          *
80469          *
80470          *
80471          *
80472          *
80473          *
80474          *
80475          *
80476          *
80477          *
80478          *
80479          *
80480          *
80481          *
80482          *
80483          *
80484          *
80485          *
80486          *
80487          *
80488          *
80489          *
80490          *
80491          *
80492          *
80493          *
80494          *
80495          *
80496          *
80497          *
80498          *
80499          *
80500          *
80501          *
80502          *
80503          *
80504          *
80505          *
80506          *
80507          *
80508          *
80509          *
80510          *
80511          *
80512          *
80513          *
80514          *
80515          *
80516          *
80517          *
80518          *
80519          *
80520          *
80521          *
80522          *
80523          *
80524          *
80525          *
80526          *
80527          *
80528          *
80529          *
80530          *
80531          *
80532          *
80533          *
80534          *
80535          *
80536          *
80537          *
80538          *
80539          *
80540          *
80541          *
80542          *
80543          *
80544          *
80545          *
80546          *
80547          *
80548          *
80549          *
80550          *
80551          *
80552          *
80553          *
80554          *
80555          *
80556          *
80557          *
80558          *
80559          *
80560          *
80561          *
80562          *
80563          *
80564          *
80565          *
80566          *
80567          *
80568          *
80569          *
80570          *
80571          *
80572          *
80573          *
80574          *
80575          *
80576          *
80577          *
80578          *
80579          *
80580          *
80581          *
80582          *
80583          *
80584          *
80585          *
80586          *
80587          *
80588          *
80589          *
80590          *
80591          *
80592          *
80593          *
80594          *
80595          *
80596          *
80597          *
80598          *
80599          *
80600          *
80601          *
80602          *
80603          *
80604          *
80605          *
80606          *
80607          *
80608          *
80609          *
80610          *
80611          *
80612          *
80613          *
80614          *
80615          *
80616          *
80617          *
80618          *
80619          *
80620          *
80621          *
80622          *
80623          *
80624          *
80625          *
80626          *
80627          *
80628          *
80629          *
80630          *
80631          *
80632          *
80633          *
80634          *
80635          *
80636          *
80637          *
80638          *
80639          *
80640          *
80641          *
80642          *
80643          *
80644          *
80645          *
80646          *
80647          *
80648          *
80649          *
80650          *
80651          *
80652          *
80653          *
80654          *
80655          *
80656          *
80657          *
80658          *
80659          *
80660          *
80661          *
80662          *
80663          *
80664          *
80665          *
80666          *
80667          *
80668          *
80669          *
80670          *
80671          *
80672          *
80673          *
80674          *
80675          *
80676          *
80677          *
80678          *
80679          *
80680          *
80681          *
80682          *
80683          *
80684          *
80685          *
80686          *
80687          *
80688          *
80689          *
80690          *
80691          *
80692          *
80693          *
80694          *
80695          *
80696          *
80697          *
80698          *
80699          *
80700          *
80701          *
80702          *
80703          *
80704          *
80705          *
80706          *
80707          *
80708          *
80709          *
80710          *
80711          *
80712          *
80713          *
80714          *
80715          *
80716          *
80717          *
80718          *
80719          *
80720          *
80721          *
80722          *
80723          *
80724          *
80725          *
80726          *
80727          *
80728          *
80729          *
80730          *
80731          *
80732          *
80733          *
80734          *
80735          *
80736          *
80737          *
80738          *
80739          *
80740          *
80741          *
80742          *
80743          *
80744          *
80745          *
80746          *
80747          *
80748          *
80749          *
80750          *
80751          *
80752          *
80753          *
80754          *
80755          *
80756          *
80757          *
80758          *
80759          *
80760          *
80761          *
80762          *
80763          *
80764          *
80765          *
80766          *
80767          *
80768          *
80769          *
80770          *
80771          *
80772          *
80773          *
80774          *
80775          *
80776          *
80777          *
80778          *
80779          *
80780          *
80781          *
80782          *
80783          *
80784          *
80785          *
80786          *
80787          *
80788          *
80789          *
80790          *
80791          *
80792          *
80793          *
80794          *
80795          *
80796          *
80797          *
80798          *
80799          *
80800          *
80801          *
80802          *
80803          *
80804          *
80805          *
80806          *
80807          *
80808          *
80809          *
80810          *
80811          *
80812          *
80813          *
80814          *
80815          *
80816          *
80817          *
80818          *
80819          *
80820          *
80821          *
80822          *
80823          *
80824          *
80825          *
80826          *
80827          *
80828          *
80829          *
80830          *
80831          *
80832          *
80833          *
80834          *
80835          *
80836          *
80837          *
80838          *
80839          *
80840          *
80841          *
80842          *
80843          *
80844          *
80845          *
80846          *
80847          *
80848          *
80849          *
80850          *
80851          *
80852          *
80853          *
80854          *
80855          *
80856          *
80857          *
80858          *
80859          *
80860          *
80861          *
80862          *
80863          *
80864          *
80865          *
80866          *
80867          *
80868          *
80869          *
80870          *
80871          *
80872          *
80873          *
80874          *
80875          *
80876          *
80877          *
80878          *
80879          *
80880          *
80881          *
80882          *
80883          *
80884          *
80885          *
80886          *
80887          *
80888          *
80889          *
80890          *
80891          *
80892          *
80893          *
80894          *
80895          *
80896          *
80897          *
80898          *
80899          *
80900          *
80901          *
80902          *
80903          *
80904          *
80905          *
80906          *
80907          *
80908          *
80909          *
80910          *
80911          *
80912          *
80913          *
80914          *
80915          *
80916          *
80917          *
80918          *
80919          *
80920          *
80921          *
80922          *
80923          *
80924          *
80925          *
80926          *
80927          *
80928          *
80929          *
80930          *
80931          *
80932          *
80933          *
80934          *
80935          *
80936          *
80937          *
80938          *
80939          *
80940          *
80941          *
80942          *
80943          *
80944          *
80945          *
80946          *
80947          *
80948          *
80949          *
80950          *
80951          *
80952          *
80953          *
80954          *
80955          *
80956          *
80957          *
80958          *
80959          *
80960          *
80961          *
80962          *
80963          *
80
```

NEW

The most powerful word processor for the Apple, Apple Writer, just got more powerful.

FILING SYSTEM FOR APPLE WRITER

A text-oriented database that works within Apple Writer.
You already know how to use it.

You are actually using Apple Writer when entering or editing data.

- No limit to field length
- Print reports with up to 8 columns
- Print 80 or 120 character wide reports
- Print mailing labels or envelopes
- Save formatted printouts, reports, and labels files
- Written in WPL, entire program is listed & explained
- User modifiable
- Includes Minute Manual For WPL

MinuteWare You must have Apple Writer.
P.O. Box 2392 Specify DOS 3.3 or ProDOS
Columbia, MD 21045 For Apple //e or //c
(301) 995-1166 \$99.95

Circle 27 on Reader Service Card.

Incredible SwyftWare!™

It is not possible in an ad to really explain this Apple II (e or c) product which outperforms all other software in speed and simplicity. It does no-frills word processing, information retrieval, telecommunications and many other tasks. Reviewers call it "foolproof and frustration free" and "blindingly fast."

It appeals to beginners and experts, Jef Raskin,

who invented the Macintosh and who later created SwyftWare, has written up the hows and whys of this product. Please write for a copy. No charge. Or order SwyftWare and see for yourself. At \$89.95 and with a 30-day refund policy, there's no risk.

US 800/982-5600 CA 800/562-7400

Information Appliance
1014 Hamilton Ct., Menlo Park, CA 94025



5 1/4" DS/DD with hub ring and sleeve, factory warranted, packaged in 50's. Shipping Extra. Quantity 50, 85¢ each.

SUMMER SPECIAL!!

Order 100 or more disks before Sept. 30, 1986 and WE'LL PAY THE SHIPPING. Just mention this ad when you place your order and receive FREE SHIPPING.

(Offer not valid in conjunction with any other offer.)

We sell 3 1/2" & 5 1/4" disks—all types, major brands. Call toll free:

1-800-321-4668

in Colorado, 303-234-0871

VISA, MASTERCARD, OR COD ACCEPTED

75¢
each
Qty 100

ALF

1315-F Nelson St.
Denver, CO 80215

RIGHT OF ASSEMBLY

Listing 4. Revised screen-clear program.

```

1  ****
2  * SCREEN CLEAR PROGRAM #1B *
3  * 8/1/86 *
4  * MERLIN ASSEMBLER *
5  ****
6  *
7  ORG $300
8  *
9  PTR EQU $06 ; PTR = $06,07
10 CHAR EQU $08
11 KYBD EQU $C000
12 STROBE EQU $C010
13 *
14 ENTRY LDA #$04 ; HIGH ORDER BYTE OF
15 STA PTR+1 ; SET HIGH BYTE OF
16 LDY #$00 ; LOW ORDER BYTE OF
17 STY PTR ; SET LOW BYTE OF
18 * SETS PTR (6,7) TO $400
19 READ LDA KYBD ; GET KYBD CHARACTER
20 CMP #$80 ; KEYPRESS?
21 BCC READ ; NO, THEN TRY
22 STA STROBE ; CLEAR KYBD STROBE.
23 STA CHAR ; SAVE CHARACTER
24 CLEAR LDY #$00 ; SET Y = 0
25 LDA CHAR ; GET CHAR TO
26 LOOP STA (PTR),Y ; 'CLEAR' TO
27 INY ; PUT 'SPACE' IN
28 BNE LOOP ; Y = Y + 1
29 NXT INC PTR+1 ; BRANCH WHILE Y =
30 CMP #$08 ; $1 TO $FF
31 F1 BCC CLEAR ; PTR GOES FROM $400
32 AGAIN JMP ENTRY ; TO $500
33 * STOP WHEN PTR =
34 * NOT THERE YET
35 * INFINITE LOOP

```

An interesting variation on this is to enter graphics mode by typing in GR before calling the routine. The screen will clear to different colors and line patterns.

This second variation uses the principles we covered in the June Right of Assembly (p. 91) of reading the keyboard (\$C000) until it gets a value greater than \$80, which means that a key has been pressed. The program then temporarily holds this value in the variable CHAR so that it can retrieve it each time after incrementing PTR in the NXT section.

See what variations you can make on this, or try the hi-res screen (\$2000-\$3FFF). See you soon! ■

Roger Wagner is the author of Assembly Lines: the Book and is president of Roger Wagner Publishing, the publisher of Merlin and MerlinPro assemblers. Write to him at Roger Wagner Publishing, 10761 Woodside Avenue, Suite E, P.O. Box 582, San Jose, CA 92071.

Continued from p. 35.

Diamond automatically calculates many categories from other fields. Besides typical stats like batting averages and earned-run averages, Diamond figures on-base percentage for hitters and strike-out average for pitchers. It gives switch hitters a breakdown of their performance from each side of the plate. The program even allows for ten user-defined statistics.

The team-information module handles the names and addresses of the manager and up to five coaches, maintains a 50-game schedule, tracks car-pool assignments, and keeps a modified equipment list and the team's win/loss totals.

The car-pooling segment is particularly well done. It allows for information on the driver and up to eight passengers per car, including each person's telephone number. The equipment list is somewhat limited, since you can list only eight major areas. You can note individual bat sizes in a separate section of the form, though, and print hard copies of all your information.

What's the Score?

Keeping score as games are played is one of Diamond's major functions. If you can bring your computer to games, you'll love this portion of Diamond.

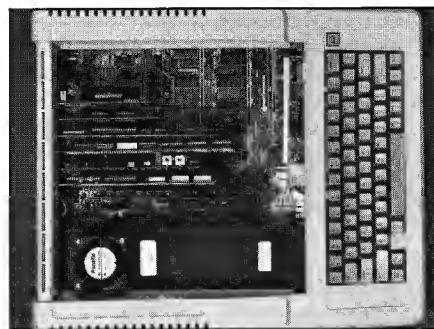
The game-scoring module is very flexible when you're substituting players, creating lineups (including designated hitter), and entering play-by-play results (in most cases, just one key-stroke per result). The program displays all results on screen, three innings at a time.

After scoring a complete game, Diamond automatically updates offensive, defensive, and pitching statistics on your team-stats disk—you don't have to retype the results. You can print box and line scores, as well as team or individual player stats.

Diamond is easy to use, but you should plan to spend a few hours learning the program first (more if you're using the game-scoring option).

Diamond does an excellent job of integrating information. For example, once you've assigned a player a roster number, that number is all you need to create a lineup or start a car pool. Overall, Diamond is a very strong package. ■

James V. Trunzo
Leechburg, PA

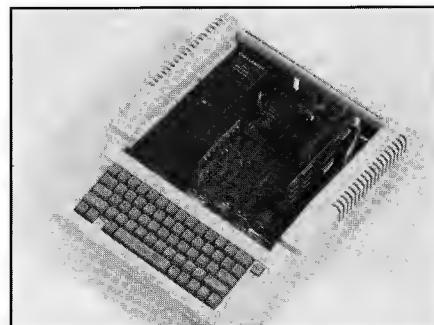


A Hard Fit

QUICK-20

CMC Computer Systems, 1514 East Edinger, Suite H, Santa Ana, CA 92705

Internal hard disk; Apple IIe
\$1395



CHALLENGER

Space Coast Systems, P.O. Box 2767, Titusville, FL 32781

Internal hard disk; Apple IIe
\$1495

	Challenger	Quick-20
Ease of setup	■■	■■
Ease of use	■■■	■■■
Documentation	■■	■■
Support	■■	■■
Overall	■■	■■

The Apple IIe's open architecture has given rise to a variety of slot-stuffing enhancements, but internal hard disks are the most ambitious add-ons yet. They aim for the unbeatable speed and storage of an external hard drive, without the drawbacks: crowded desk space and tangled cables connecting the drive, your computer, and the already overfilled wall socket.

I tested two 20-megabyte internal hard disks, Space Coast Systems'



IS YOUR APPLE // WORD PROCESSOR LETTING YOU DOWN? STEP UP TO **GUTENBERG® SR**

IF YOU NEED...

customized screen fonts – to display up to 115 extra user-defined characters on the screen and print them as special 7x12 dot graphics in your text, automatically.

downloaded printer fonts – to dynamically change the printer's character set. Gutenberg supports font downloading into the Apple Imagewriter or DMP of up to 21 different fonts at 14 print pitches in proportional print mode and still micro-justifies the print line.

special alphabets – to print text in many different languages, including: Danish, Finnish, French, German, Greek, Hebrew, Italian, Polish, Russian, Spanish, Swedish, Syriac, Ukrainian, etc.

scientific symbols – for any type of technical writing.

graphic pictures – embedded in your text, banner headings for newsletters or letterheads, or big display lettering.

flexible print layouts – for best reproduction of your document. Gutenberg's advanced formatting language allows unrestricted placement of text.

GUTENBERG® SR IS THE ANSWER!

Gutenberg runs on all Apple // computers or compatibles with 64K of memory. Gutenberg supports the Apple Imagewriter and Apple DMP with printer font downloading, the C.Itoh Prowriter, the NEC 8023, all Epson MX-100 compatibles with regular graphics, and most letter-quality printers without the graphics option.

To request your
**FREE 16-page booklet
"Your Introduction to
Gutenberg JR + SR"**
write to:

Gutenberg Software Limited
47 Lewiston Road
Scarborough, Ontario
Canada – M1P 1X8
or phone: (416) 757-3320
or circle the appropriate number
on the Reader Service Card.

Apple is a reg. trademark of Apple Computer, Inc.

Challenger and CMC Computer Systems' Quick-20, and found them fast and convenient—but fraught with some annoying compromises as well.

Under the Hood

If you're too timid to take your Apple apart, neither of these drives is for you. Installing either one requires complete disassembly, not just the top-popping with which you may be comfortable: The hard disk fits into your machine in place of your current power supply. The Quick-20 even obliges you to temporarily remove the keyboard to mount an intermediate interface board on a new bracket below it.

Of the two, the Challenger is marginally easier to install. After bolting it in, you simply route its cable along the Apple's motherboard and connect it to the interface card in slot 7.

While that sounds simple enough, some unforeseen difficulties cropped up when I tried it. The interface cable on the first Challenger I received wasn't long enough to reach the card

in slot 7. As the card can be used only in that slot, the drive (and my Apple, since I refused to reinstall the power supply and reassemble the computer only to tear it apart later) were effectively useless during the ten days it took Space Coast Systems to ship a replacement.

The Quick-20's problem is more obvious: It won't fit into early versions of the Apple IIe and II Plus without an uncompromising intrusion into the keyboard area. I strongly recommend you check with your dealer or call CMC directly to find out if your Apple is physically compatible with the Quick-20.

Otherwise, if you feel capable of installing either drive, you probably can. The added inconvenience of the Quick-20's intermediate board is conceptual rather than real. But if you haven't mastered Zen and the art of Apple disassembly, have your dealer do it for you.

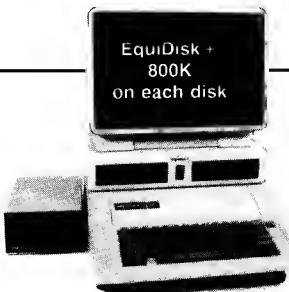
Both drives came preformatted and partitioned (when applicable) with boot software already installed. After

using the Sider's installation software, I felt an uncomfortable amount of early-Apple *déjà vu* with the internal drives' user-futile programs. CMC gets bonus points for the Mouse Desk windowing software it supplies with the Quick-20, though. It makes operating in the hard-disk environment much simpler.

As a whole, the installation software for both drives appears to be derived from some warped interpretation of what a multi-user system might be if one existed for the Apple II. In lieu of a Sider-like boot menu, needless passwords and user names abound. The installation process takes as much effort as putting an Apple into a Corvus OmniNet, without the benefits of the latter's multi-access capabilities.

One-Man Band

From conversations with both companies, I can't help but assume they're conceptual "one-man" operations (not that only one person works there, but you won't get very far if "the" important person is busy).



The EquiDisk + is the next generation in 5 1/4" floppy disk storage—and it's here today! Unlike your old Apple drives that were probably too small for any real work, the EquiDisk + dual drive system gives you over 1.6 megabytes of immediately accessible on-line storage. Now you can store over 8 megabytes of data with that box of diskettes sitting on your shelf. That's over 3500 double-spaced pages, or 70,000 names and addresses, or complete payroll information for more than 4000 employees. And with that second box of diskettes on your shelf you can back it all up—800K on each disk.

More than just Storage!

- + The EquiDisk + works with DOS 3.3, ProDOS and CP/M.
- + Standard 5 1/4" diskettes are all you need.
- + The entire unit fits neatly between your monitor and computer console.

Apple, Apple Logo, DOS 3.3, ProDOS and AppleWorks are registered trademarks of Apple Computer, Inc. CP/M is a registered trademark of Digital Research, Inc. Franklin Ace is a trademark of Franklin Computer Corp.

EquiDisk +™

We've got a lot in store for you!

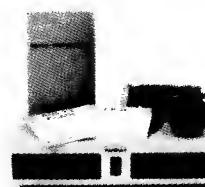
- + Each EquiDisk + comes with a surge suppressor, three built-in AC outlets on the back and a front-mounted power switch. You can turn everything on and off at the same time.
- + CP/M users can access software formatted for other computers. Using one of the commercially available "transfer" programs, this feature allows you to access any CP/M software and run it on your Apple.
- + Works with the Franklin Ace 2000 series.

More for Everyone!

- + AppleWorks—now your data disk will hold 800K . . . checkbook records for 5 years; every term paper or book report you've ever done; every recipe in your kitchen and the Christmas mailing list . . . on one diskette.
- + Programmers—all of your assemblers, linkers, compilers, editors and debuggers, as well as your source code . . . on one diskette.

CP/M cards supported: Microsoft Softcard (56K and 60K Versions); ALS Z-Engine; PCPI (Starcard and Appli-Card)

- + Business—months of payroll, accounts receivable and payable, general ledger and daily correspondence . . . on one diskette.
- + Educators—consolidate all of your skill drills and tutorials, with room for individual work . . . on one diskette.



Factory-Direct Price
\$499.00

Includes dual drives, case, cables, controller card, manual and software
1 year limited warranty



Minimum system configuration:

***Apple II+ or IIe with 64K RAM**

***One standard Apple or equivalent drive**

To order call toll-free
1-800-854-0561 ext. 825
(24 hours/7 days)

H&M Disk Drives

1101 E. Pacifico
Anaheim, CA 92805
(714) 385-1146

15 day Money-back Guarantee

When I called Space Coast about a new interface card, which arrived unannounced and promised ProFile compatibility (a \$200-plus invoice appeared shortly thereafter), the person I needed was unavailable throughout the day, and there was no information to be gleaned elsewhere. A CMC answering machine greeted one of my calls, but someone did call back the same day.

There are negligible differences between the drives in terms of speed. You must install the interface cards in a particular slot (Challenger 7, Quick-20 6), so ProDOS doesn't need to search for them through every slot. I found this feature only moderately beneficial.

When the Challenger's first cable was too short, I hoped to gain a working drive and computer by trying the interface card in slot 6. No such luck. ProDOS insisted the hard drive was in slot 7 and couldn't resolve the conflicts engendered by having it actually in slot 6.

Also, the Challenger "disappeared"

once in a while when I worked from a subdirectory on my 3½" inch drive. That subdirectory's pathname was /TESTS/PROGRAMS, and the Challenger's volume name was /PROGRAMS. These two pathnames are distinct under ProDOS, and this problem shouldn't have occurred.

As for the hard disks' documentation, those of you who have read other reviews I've written will know that I can abide quite a few deficiencies in hardware and software, providing there's a clear, concise manual to explain how to surmount them. Neither manual meets my standards.

The Challenger documentation, although profusely illustrated, reads as if it were written by someone who uses English as a second language. The CMC manual is quite eloquent, but devoid of illustrations. Considering that the Quick-20's installation is more complicated, this is a serious shortcoming.

Hardly State of the Art

Both of these drives seem aimed at

the ProDOS-only user, specifically the AppleWorks user. Given the confusing installation software, I'd hate to start playing with DOS 3.3 or CP/M partitions.

The extra speed and storage of a hard disk have their price. These drives double the weight of your computer. And just like external hard disks, they're susceptible to shocks and bouncing—unavoidable occurrences if you carry your Apple around.

In addition, whichever drive you choose, I feel you must add a cooling fan. There's simply too much heat circulating inside your Apple, even with the fans contained in the hard disks themselves.

Given the current trends in hard-disk technology, an internal hard disk for the Apple II is a good idea. Unfortunately, the Challenger and Quick-20 aren't the best possible examples of that technology.

If someone is going to introduce an internal hard disk, I'd prefer it to be on a card that plugs directly into an

The best AppleWorks-Compatible spelling checker just got better! Introducing the improved... **Sensible Speller™**

The new ProDOS Sensible Speller supports the Apple II Memory Expansion Card and is now supplied on the UniDisk 3.5, as well as on the 5½" disk. Its huge vocabulary—80,000 words in all—is derived from the official Random House Dictionary®.

Used in conjunction with a memory expansion card, the improved Sensible Speller runs up to three times faster than before. You can also load everything—program and dictionaries—on to a hard disk drive.

However, Sensible Speller is still just as easy to use. It shows you misspellings in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones.

Chances are you are already equipped to use Sensible Speller because it works with AppleWorks and virtually all other Apple word processors.* It runs on all Apple //c, //e and II+ computers and is available at your dealer for \$125.

Black's Law Dictionary™, Sensible Technical Dictionary™ and Stedman's Medical Dictionary™ are available separately on diskette for use with the Sensible Speller. Each is \$39.95. A new utility now allows you to merge the dictionaries together.

*Sensible Speller ProDOS works with the following word processors: AppleWorks, AppleWriter ProDOS version [Apple Computer, Inc.], Format It Enhanced ProDOS [Kensington Microware], Mouse Write-text files [Roger Wagner Publishing], MouseWord [International Solutions], PFS WRITE ProDOS [Software Publishing, Inc.], WordTalk [Computer Aids] and WordPerfect [SSI Software], Word Juggler [Quark Inc.], Writing Wizard [Scarborough Systems], Zardax ProDOS [Computer Solutions], and others. Owners of trademarks indicated in parentheses: Black's Law Dictionary [West Publishing, Inc.], Stedman's Medical Dictionary [Wavelly Press, Inc.]



Sensible Software, Inc.

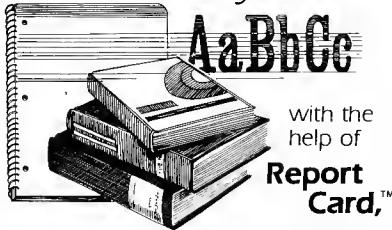
210 S. Woodward, Suite 229, Birmingham, MI 48011
(313) 258-5566



COMPATIBLE WITH:

- Memory Expansion Cards
- UniDisk 3.5 & 5 1/4" Drives
- Hard Disk Drives
- AppleWorks and Most ProDOS Word Processors
- Catalyst

Preparing Grades
IS as easy as



with the
help of
**Report
Card,™**

the software program which saves you time and helps you avoid mistakes, even if you are a computer novice.

Report Card tracks up to 300 students on one diskette, holds up to 40 students per class and 50 activities per student. It correctly handles "incompletes," calculates student and class averages, and ranks students with various printing and sorting options. And it has a built-in editor which makes it easy to make corrections and remove incompletes.

REPORT CARD™

including software, manual and tutorial is available for Apple and IBM PC computers for \$59.95.

Apple and IBM PC are trademarks of Apple Computer Inc. and International Business Machines Corp. respectively.



Sensible Software, Inc.®
210 S. Woodward, Suite 229,
Birmingham, MI 48011 (313) 258-5566

Circle 85 on Reader Service Card.

The blood of Kings or of Knaves or both. Family Roots software helps you trace your bloodlines back through lost generations and the mists of time.

For your Apple, IBM, Commodore, Kaypro, TRS-80,* and many others, Family Roots offers all kinds of genealogical assistance: Individual and group sheets, charts, name indices, general search and text

capabilities. Adapts to most disk drives, printers, and screens. You get more utility programs, plus lots of personal control. A comprehensive (new) manual is included.

All for just \$185.

Write or call today for more information and a free brochure.

Quinsept, Inc.

P.O. Box 216
Lexington, MA 02173
(617) 641-2930

American Express,
Visa, and MasterCard
gladly accepted.

* Trademarks for Apple Computer Inc., International Business Machines, IBM, Inc., Digital Research and Tandy Corp.



Circle 16 on Reader Service Card.

REVIEWS

Apple slot. That's possible with 3½-inch drive technology and surface-mount chip techniques. You'd also need a beefier power supply to support the system, but with 1-megabyte-plus memory cards, that's not such a bad idea anyway. ■

Bill O'Brien
Fort Lee, NJ

Editor's note: CMC's Charles McConathy responds that his firm recommends customers buy one of CMC's external hard disks; when a buyer does request a Quick-20, CMC suggests the dealer install it. He adds that the drive is now bundled with ProSEL instead of Mouse Desk menu software, that the ProDOS version connects to any slot, and that tests with a Quick-20 and an Apple full of cards produced no overheating (see Letters in next month's inCider for further details).



Quick Repairs

FIXIT

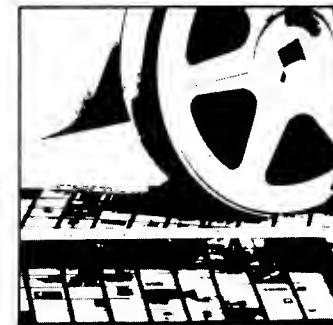
Random House Software, 201 East 50th Street, New York, NY 10022

Electronic puzzles; Apple II Plus, IIe, IIc, joystick optional
\$39.95

Ease of setup	■ ■ ■ ■ ■
Ease of use	■ ■ ■ ■ ■
Documentation	■ ■ ■ ■ ■
Support	■ ■ ■ ■ ■
Overall	■ ■ ■ ■ ■

If ever there was a program that could teach logical thinking, Fixit is the one. Fixit has all the entertaining qualities of an arcade game. It's also a superb tool for teaching reasoning skills and a wonderful source of mental recreation.

**This Publication
is available in
Microform.**



**University Microfilms
International**

Please send additional information

for _____
Name _____
Institution _____
Street _____
City _____
State _____ Zip _____

300 North Zeeb Road
Dept. P.R.
Ann Arbor, MI 48106

**WITHOUT UNIDOS,™
YOUR UNIDISK 3.5 JUST
WON'T RECOGNIZE
AN
OLD
FRIEND.**



Until now, DOS 3.3 was a stranger to your Apple UniDisk 3.5. But no more!

UniDOS is DOS 3.3 for your UniDisk 3.5. It lets your 800k UniDisk 3.5 function as a dual 400k disk drive system while you work with your favorite DOS 3.3 programs and data. And it supports the Apple RAM extension cards and compatibles.

Introduce UniDOS to your UniDisk 3.5 right away. At \$35.00 they'll become fast friends.

meacom

P.O. Box 272591, Houston, TX 77277
(713) 526-5706, Telex 494593

Money Back Guarantee. VISA and MC accepted. UniDOS is written by David Hemmo and Marc Moini. **For Macintosh Owners:** Meacom also offers Mac + II, an Apple II emulator (128k, 80 column) for your 512k Mac or MacPlus. UniDisk 3.5 and Macintosh are trademarks of Apple Computer, Inc. UniDOS is a trademark of Meacom.

Circle 248 on Reader Service Card.

Fixit gives you 200 machines to repair, and all of them do the same job. You drop a bolt into the machine, which conducts it to a hole in a box at the other end. Kit 001 consists solely of the wrench that drops the bolt and the box into which it fits.

The kits get progressively more complex, though, requiring you to complete them with various "parts" shown at the bottom of the screen. Elbows turn the bolt 90 degrees in its flight. Converters change the bolts from large to small and hollow to solid. Bouncers reverse the direction of the bolt's travel. Finally, the bolt must cross keys to unlock the box, and some of the parts change property after a bolt touches them.

The main principle of the machine is that the bolt, as it reaches the box, must conform to the size, color, and solidity of the hole. That's where your diverse collection of parts comes in: All you have to do is figure out how to assemble them to get the bolt into the box.

Exercising Your Intellect

The first 50 kits or so comprise a tutorial of sorts, demonstrating how each part works. You learn how to place the parts, what they do, and how to turn them (90 degrees at a time) to change the direction of the bolt.

You'll also discover that this game has more than a few curves to throw at you. One of the worst is finding parts on screen that you don't need to complete the kit. You have to become an expert in charting the flow of the bolt so that you can recognize which parts just complicate the problem and which are indispensable in fixing the kit.

When you've completed a kit, you can test it by dropping the bolt to see if it flies into the box. If you've grabbed the wrong part or if it's pointing in the wrong direction, you can move or turn it. The parts you see on screen when the kit is first displayed won't move, though. Since you're stuck with those, learn to be ingenious.

If you manage to solve all 200 kits, you can then design your own as puzzles for others to try, and add them to the permanent collection on disk. If you like, you can also go back and try to beat your best times for solving Fixit's kits. After 200 of them, you'll be surprised how many solutions you forget entirely, making the experience fresh and new.

Not only is Fixit a great game for the mechanically minded, it's a real find for those who want to improve their reasoning skills, as it requires pure thinking. Children will make slower progress than adults, but the kits' difficulty increases at such a gradual pace that most older children should be able to advance.

For adults, Fixit is pure fun—puzzles for their own sake, a vigorous work-out for the intellect. You come away from the game mentally refreshed and stimulated. What more could you ask? ■

*Brian J. Murphy
Fairfield, CT*

BACKUP YOUR DISKS

EDD Version 4 is the most powerful copy program available for backing up "uncopyable" or "copy-protected" disks. ■ In addition to backing up disks, **EDD 4** also features a hi-resolution graphic DISK SCAN option to help you locate information on a disk, a CERTIFY DISK option for certifying blank disks, and since it's very important that your disk drives are running properly (especially when copying disks), we have also included an EXAMINE DISK DRIVE option. ■ Even though **EDD 4** has been preset to copy the broadest range of copy-protections possible, **EDD 4** can be "modified" to back up almost any disk that runs on your Apple! ■ For the dedicated user, in addition to **EDD 4**, we are offering an **EDD 4 PLUS** version that includes a specially designed hardware card which allows **EDD** to copy **EVERY** bit of information from each track accurately! You can bet that if **EDD 4 PLUS** can't copy it, nothing will! ■ **EDD 4** runs on an Apple II, II Plus (including most compatibles, IIe, IIC, and IIC (using emulation mode), and is priced at \$79.95. ■ **EDD 4 PLUS** runs on Apple II, II Plus (including most compatibles), and IIe, and is priced at \$129.95 (duodisk/unidisk 5.25 owners must add \$15 for a special cable adapter). Ask for **EDD** at your local dealer, or to order direct, include \$3 (\$6 foreign) shipping/handling for **EDD 4**, or include \$5 (\$8 foreign) for **EDD 4 PLUS**. ■ Mastercard and Visa accepted. All orders must be prepaid. ■ If you have an earlier version of **EDD**, you can update to **EDD 4** or **EDD 4 PLUS** at a reduced price. Send your **EDD** disk to us, and deduct \$50 from your order.

UTILICO MICROWARE

3377 SOLANO AVENUE / SUITE 352 / NAPA, CA 94558 / 707-257-2420

EDD is sold for the sole purpose of making archival copies **ONLY!**

ESSENTIAL DATA DUPLICATOR 4

CLASSIFIEDS

Digitizers

COMPUTER EYES

- Make custom T-Shirts
- Print computer portraits
- Join "free" public domain ART GALLERIES
- Capture real world images
- Digitize video signals from: Video Tape Recorders (VCR's), Video Cameras, etc.

Apple ComputerEyes 109.00

Software interface to:

Print Shop 12.00

Double HIRES (Ile), (IIC) 12.00

Newsroom 12.00

Panasonic/Ikegami Commercial grade B/W video cameras 159.00

Special Hookup cabling with instructions 19.00

UNDERWEAR ribbons to make custom heat iron-on transfers for T-shirts, scarves, etc 12.00

Color Pens 12.00

For VISA/MASTER CHARGE ORDERS,

Call (201) 889-8416 or Send Check/Money Order and all inquiries to:

HAL SYSTEMS

P.O. Box 293
Scotch Plains, NJ 07076

Please Note:

Prices include shipping & handling, (continental USA).

One year parts & labor warranty.

For COD orders, add \$5.00

NJ residents add 6%

AVAILABLE for APPLE, ATARI, C-64, AND IBM.

****Dealer Inquiries Invited****

Software

THE PICKS! 86

Pro football picking game! You make the picks. Computer keeps track of standings and statistics. Fun competition for friends or family. This unique disk is yours for only \$12.00! Apple II family. Printer required. For more information send SASE.

EPIC SOFTWARE

P.O. Box 1153
West Hanover, MA 02339

DESIGN YOUR OWN LABELS

For disks, name badges, video cassettes, photos, personal property, slides, parts, home canning, advertising, and more. Set height, width & lines-per-inch, then use our unique on-screen edit system to design a label. Edit lines and set formats until it's just right, then print 1 or 1000 copies. Add special "fill-in" fields and PRO LABEL will prompt for new data each time the label's printed. Do serial numbers. Use our prestored designs or make new ones. Requires 128K Ile/IIC & 1 drive. Program, user guide, and 100 free labels: \$19.95 + \$1 shpg. CHK/MC/VISA

PRO LABEL/AP

16 E. Main/P.O. Box 631
Marshalltown, IA 50158
1-800-634-5463/IA 1-800-542-7981

"SPEED UP" FOR HOME ACCOUNTANT

How would you like to: READ the data and program files four times faster?

SEARCH 1,000 transactions in less than 3 seconds?

REDUCE garbage collection from 4.5 to .5 seconds?

LOAD the report program in 40 instead of 240 seconds?

GO directly from program to program?

USE a RAM disk or hard disk? PLUS MUCH, MUCH, MUCH, MORE!

Satisfaction Guaranteed or your money back.

DOS 3.3 only, requires 64K. \$24.00 + \$2.50 S/H, VISA/MC. (48K version also available)

SOFTWARE SOLUTIONS

5516 Merritt Circle
Edina, MN 55436
For orders only 1-800-835-2246
X131

CHURCH PROGRAMS FOR APPLE Ile

CHURCH PEOPLE (\$100 or Demo \$10) Print Directory, Sorted Labels. Print Birthday/Anniv/Skills lists. CONTRIBUTIONS (\$100 or Demo \$10) Print Member & Summary Statements. Distribute Contributions by %. Both complete for \$150. Shipping free in USA. Calif. res. add 6%. Indicate Sat or Sun and # members. Need hard disk if over 700 members.

PARADISE CHRCH PROG for COMP (PCPC)
14133 Racine Circle
Magalia, CA 95954
(916) 873-3677

LOOKING FOR A JOB?

JOB FINDER can help professionals, students or anyone looking for a new position. All research and preparation has been done to send out a strong cover letter and a top notch resume. Package includes tips on job hunting, 7 resumes, 9 cover letters, quality stationery, and more. Everything needed for successful job hunting at any level for only \$19.95 + \$1.50 S&H. DOS 3.3 (48K) Send check/MO to

POINT ACROSS SYSTEMS

PO Box 1462
No. Kingstown, RI 02852

Publications

MICROCOMPUTER BOOKS

Selected Apple II titles include:

- Apples for Teachers \$12.95 (w/disk package \$27.95)
- Applesoft BASIC Programmer's Reference Manual \$22.95
- Applesoft Tutorial \$27.95
- Apple Ile or Ile Technical Ref. Manual \$22.95
- Basic Program. w/ProDOS \$27.95
- Basic Apple Basic \$15.95
- Data Base Management \$13.95
- Mastering Appleworks \$13.95
- Microcomputer GRAPHICS \$13.95 (w/disk, \$27.95)
- Multiplan Models for Business \$14.95

Shipping/Handling extra.

MC/VISA/AE

Send for FREE Directory.

MICRO BOOKS

PO BOX 4068
W. RICHLAND, WA 99352
800/547-9755 Ext. 8
509/967-5084

FRANKLIN HARD DRIVE

Hardworks is a hard drive specially engineered to run on Franklins & Apples even where the Sider won't.

* 20 Meg ProDOS 1.1.1 drive ... \$999

* ProDOS & DOS 3.3 software ... \$69

* ProDOS, Pascal, CPM (Softcard, PCPI Appli-Card, Franklin & Star-card), requires a true slot 6) ... \$149

Brought to you by the Franklin Users Group. Membership \$20 year, includes newsletter, BBS, hotline, PBS lib. (not required to order). S&H \$20 order, Visa/Mastercharge 5%.

A.S.C.I.I.

67N E. Wind Rd.
Tecumseh, MO 65760
(417) 679-3526

Fun

COMPUTER CLOTHING??

YES!! Finally! Compute in Comfort! Be Unique!

100% Cotton Sailcloth

Practical—Whimsical—Great Gift

Pants & Blazer (S,M,L)—

Lots of Pockets

Black, White, Tan, Olive, Sky Blue

\$69.69 (incl. documentation)

Also: "Floppy Disk" Hats, suspenders, T-Shirts with computing quotes: ("I/O, I/O, it's off to work I go") etc.

Free & Fun Information:

PAN ADVENTURES

41 Avon St.
Keene, NH 03431
(603) 357-2002

Games

FANTASY CONSTRUCTION

NEW! A.C.S. Ult-4 Con(C) Set edits maps, chars, mons etc. \$39.99

NEW! BARD'S TALE DOC—Edit, heal, resurrect chars and more!! \$19.99

E.C.S. Ult-3 C. Set edits maps, mons, more. inc. Lavalite scenario! ... \$28.50

W. WORKBENCH: Wiz I-III C. Set (mazes, mons, items, msgs, more) \$34.99

W. Scout—Get inside scoop on all Wiz I-III monsters/items \$19.99

A. WASTELAND—NEW Wiz scenario 2098 A.D. New Mazes, plot, mons \$29.99

All inc. INFO-PACKED manuals.

NONE damage originals. CALL TOLL FREE NOW! (VISA/MC) or mail check, M.O. FAST!

MAGICSOFT

P.O. Box 908-I
Danville, CA 94526-0908
(800) 628-2828 Ext. 5202

THE MARKETPLACE

SPACE CHALLENGER II

THAT'S RIGHT!! TWO EXTREMELY CHALLENGING GAMES FOR HALF THE PRICE OF ONE. PLAY ALONE OR WITH UP TO FOUR FOR REAL COMPETITIVE FUN. MANY, MANY HOURS OF ENJOYMENT FOR THE KIDS AND THE ENTIRE FAMILY. \$13.95

LODE RUNNER III: 150 NEW CHALLENGING DATA DISK LODE RUNNER LEVELS FOR EVERYONE TO CONQUER. LOWEST INCREIBLE PRICE OF... \$8.95

ADULTS ONLY: SPACE MADNESS. AN OUTER SPACE VERSION OF STRIP BLACK JACK AND STRIP POKER. WELL, SPACE MADNESS IS ONE STEP BEYOND. UP TO SIX PLAYERS FIGHT FOR TOTAL DOMINATION OF A GALAXY. CONQUER A WORLD FROM ONE OF YOUR OPPONENTS. THEY MUST STRIP (OR SOMETHING ELSE) HOW MUCH YOU SAY?... \$13.95

BUY 2 OR MORE AND SAVE EVEN MORE. CALL FOR CURRENT PRICES.

CHIC
4002 WEST WEAVER RD. DEPT. 'A'
HAMPTON, VIRGINIA 23666
C.O.D. ORDERS CAN CALL: (804) 827-8243

ORDER NOW SEND CHECK/
MONEY ORDER +\$1.00
5 & H (VA RESIDENTS ADD
4% SALES TAX)

Circle 18 on Reader Service Card.

RIBBONS

DISCOUNT PRICES

NEW • TOP QUALITY • NO RELOADS
*COLORS

• Apple Imagewriter	\$3.85
• C. Itoh ProWriter, 1-2	\$3.85
• Epson MX-70, MX-80, MX-82	\$3.95
• Epson MX-100, RX-100, FX-100	\$4.95
• Epson LQ-1500	\$4.95
• Okidata 80, 82, 83, 92, 93	\$1.75
• Silver Reed EX, EXP, SERIES	\$4.95
• Toshiba 1340, 1350, 1351	\$5.55

*Colors—Add 75¢ Each/Red, Green, Blue, Brown

Terms: Send check or money order. Add \$2.50 shipping & handling per dozen or any fraction. MI res. add 4% sales tax.

P.O.'s accepted—Call for Approval.

Master-Media Supply
PO Box 705 • Howell, MI 48833
(517) 548-3620

Circle 6 on Reader Service Card.

**BUY DIRECT AND SAVE
FULLY APPLE COMPATIBLE**

Z-80 CP/M Card	\$39
80 Column Card w/Inverse (Videx compatible)	\$58
Autoterm 80 Col w/Softswitch & Inverse (Videx comp.)	\$68
Extended 80 Col w/64K Apple IIe	\$45
Disk Controller for 2 Drives	\$39
Parallel Printer Card w/Cable (Epson comp)	\$37
Graphic Printer Card w/Cable (Parallel)	\$48
1200/300 Baud Modem External (Fully Hayes compatible)	\$175
Super Serial Card w/Cable	\$80
16K RAM Card w/Cable	\$37
128K RAM Card w/Software & Instructions (Tian, Saturn compatible)	\$110
Numeric Key Pad for Apple IIe	\$39
Super Cooling Fan w/2 outlets	
Lighted Switch, Surge/Filter	
Joy Stick all Metal Heavy Duty, Fine Tuning, self centering Apple II/Ile, IIc (Specify)	\$25
Diskette Storage Box w/Lock & Key Holds 100	\$15
Disk Notcher w/Guide All Steel, Square Cut	\$8
Slim Disk Drive - Direct Drive w/Elec Sensor	
Super Duet, 1 Yr. Warranty - Apple II/Ile	\$120
Apple IIc	

ASSEMBLED, TESTED & 6 MONTH WARRANTY
Shipping & Handling Under \$100/10% — Over \$100/5%
School & Institutional P.O. Accepted. Dealer Inv. Invited
HOURS: MON-FRI 9-6 EST

COMPUTER SUPPLY
PO. BOX #164R, VALLEY STREAM, NY 11582
(516) 239-1854

Circle 20 on Reader Service Card.

DATA ANALYSIS: IT'S NOT JUST FOR STATISTICIANS

DATA SHOW: presentation-quality research and business graphics including 2 and 3D bar and pie charts, linear and non-linear regression, sequence plots, line charts and more. Software screen dump, fancy fonts, slide show, shrink, position and overlay graphs. Special Introductory Price: \$95

DYNA STAT PROFESSIONAL: The only microcomputer software to fully integrate more than 200 data management and statistical functions with all the high resolution color graphics of DATA SHOW. Special Introductory Price: \$195

Fully documented, completely menu driven, fast and easy to use. For all Apple II series and compatible computers with at least 64K. Programs require 1 drive. Major credit card, institutional POs and COD accepted.

CALL OR WRITE FOR
FREE
DYNA-STAT DEMO DISK

DYNAMIC MICROSYSTEMS, INC
3003 Buccaneer Rd.
Silver Spring, MD 20904

Circle 17 on Reader Service Card.

SUPER INDEX

POWERFUL DATABASE on a disk summarizes every article, review, program, letter & tip in *inCider* Mag. Cross-references corrections & updates. Ends searches thru stacks of magazines. A "tip-book" citing 1000's of solutions. Like owning a "helpline" for little more than the price of a single long-distance phone call! GUARANTEED to save you TIME and MONEY. \$5 for 1985, \$9 for 1984 & 1985

FASTFIND Not Copy-Protected

High-speed search utility. Searches any 100 sector text file in 1 second, loads them in 6 seconds. AND/OR/NOT logical operators & wild card. Searches multiple files & disks with single keypress. Up to 100 times FASTER than word processors! Finds lost files, even if you forget their names! A.P.P.L.E.'s BEST SELLER. Bonus super-fast, hard disk compatible SPEEDOS. Prints reports. Any Apple II or III. List \$29.95

\$12 & get 1985 & 1984 INDEXES FREE
(Add: \$2 S/h/Hand., Calif. res. 6.5%, credit cards 4%, overseas \$3)
FASTFIND CO., 28533 Coveridge Dr., #C, RPV, CA 90274
[Modem: 213/377-0804] VISA/MC 213/544-2350

Circle 11 on Reader Service Card.

EquiDisk + TM

Factory-Direct Price
\$499.00

Includes dual drives, case, cables, controller card, manual and software
1 year limited warranty

To order call toll-free
1-800-854-0561 ext. 825
(24 hours/7 days)

H&M Disk Drives
1101 E. Pacifico
Anaheim, CA 92805
(714) 385-1146

Circle 254 on Reader Service Card.

WE TURN APPLES INTO GOLD WITH A LITTLE ALCHEMY AND LOTS OF ENGINEERING
SINCE 1981

RGB CARDS

APPLE II E and II+ & FRANKLIN 2000:	COLORMASTER \$99.
	KALEIDOSCOPE // \$139.
FRANKLIN 1000, 1200:	COLORMASTER \$119.
	KALEIDOSCOPE // \$149.

Cards plug into slot 7. Can be interfaced with //+ 80 column card, or //e 80 column/RAM card. Compatible with all RGB monitors. Cable and connector supplied, + much more.

APPLE //C RGB: \$119.

SONY CPD 1310 super hi-res 13" RGB monitor: \$385.

TELEMAX, INC. P.O. BOX 339
WARRINGTON, PA 18976 (215) 343-3000

TOLL FREE 950-1088, wait for tone, then dial TELEMAX (touch tone)

RGB VIDEO DISPLAY INTERFACE PRODUCTS FOR IBM-PC & APPLE

Circle 252 on Reader Service Card.

RIBBONS

1-800-446-6760

	Black	Colors
Apple Image Writer	\$3.00	\$3.25
Diablo HT2-MS	\$2.50	
Epson MX-RX-FX80	\$2.75	\$3.00
MX-RX-FX100	\$3.50	\$3.75
LX80	\$3.50	\$3.75
LQ1500	\$3.75	\$4.05
NEC 3500	\$3.95	\$4.50
5500-7700	\$3.50	\$3.75
8023	\$3.00	\$3.25
Okidata 80-82-92	\$1.25	\$1.45
192-193-182	\$4.95	\$5.75
Panasonic KXP	\$6.25	

**OVER 300 RIBBONS AVAILABLE
(We Won't be Beat)**

P.C. Network Systems
513-435-2256 (Ohio)

Circle 64 on Reader Service Card.

Appleworks Users Hate Checkbook Balancing?

Our Checkbook Register and Reconciler is only **\$7.95**

You don't need costly software just for your checking account. Our Appleworks File makes your checkbook match the bank balance, to the penny, month after month, automatically, without stress. You'll love it. Free bonus included: car-loan and home-loan templates. Optional book: Spreadsheet Skills in Easy Steps, \$7.95 Satisfaction guaranteed. Order now.

Send your check to:
Steinke
4833 NE 238 Ave / Vancouver, WA 98662

inCider

93

inCider's

People's Choice Award

Do you have a favorite hardware or software product? Some product that really makes your Apple II more useful? More fun?

Tell us about it by August 15th and win a chance for an all expense paid trip to meet the maker of your favorite product.

The inCider editors will read each submission and tally the votes for the People's Choice Award. The reader who writes the best reason explaining why that product was his/her favorite, will join the inCider editors in presenting the award to the manufacturer of that product.



So this is your chance. Tell us what product made a difference to you this year and win a chance to personally thank the maker of that product. The award will be announced in the December issue of inCider.

People's Choice Award

My favorite Apple II product is: _____

I like it because: _____

Name _____

Address _____

City _____ State _____ Zip _____

Mail your choice by Aug. 15 to:

Editor

inCider Magazine

Elm Street

Peterborough, NH 03458

STATTUS REPORT



Knowledge

by Paul Statt, *inCider* staff

"You may have bought an Apple just to turn data into information. Can the same machine make knowledge out of information?"

In the CIA, *intelligence* is synonymous with *information*. Anywhere else, intelligence means more than a collection of facts—such as names, telephone numbers, or the number of Soviet missiles in Libya. To most of us, intelligence *isn't* mere information; it's the process that turns information into *knowledge*.

Information begins as a collection of related data or facts; organizing them works them into information. You may have bought an Apple just to turn data into information. Can the same machine make knowledge out of information?

A revolution in information is said to be raging. There certainly is more of it: a CD-ROM storage device, for example, can keep the Library of Congress' catalogue or the *Oxford English Dictionary* in your pocket.

"We're working on several new revolutions for '87," the manufacturer of a bar-code reader told me. His device will "change the way we look at knowledge," he claims. Maybe. Knowledge isn't that simple.

Data are simple: \$10,000, \$20,000, \$30,000.

But data by themselves don't mean very much. Put them into a little chart, though, give them some form, and you've got information:

	1984	1985	1986
Income	\$10,000	\$20,000	\$30,000

That makes more sense now—but it really comes to life only in context. Filling in the context ("Gee! Two years ago I wasn't making half the salary I'm getting now") is the process called intelligence, and the result is knowledge.

Your Apple's best trick is putting data into a hat and pulling out information: Data bases organize your data neatly; spreadsheets put them into charts. The metamorphosis of data into information doesn't look like much in my simple example—only when you're dealing with lots of data does it become exciting.

But your data base and spreadsheet can't put information into context—transform it into knowledge. Software can't create

knowledge by piling up information. More information—on a CD-ROM disk, in an on-line data base, or even in a book—won't become knowledge, just as sowing millions of seeds in a field won't grow a forest. Knowledge is the forest you can't see for the trees—all those bits of information.

Artificial intelligence promises "knowledge-based systems" that will do just what I've always insisted computers can't—pull knowledge out of the information your spreadsheet or data base took from your facts.

CD-ROM will use artificial intelligence to do for information what a spreadsheet does for data: transform it into a more intelligible shape.

The intelligent part of a CD-ROM system is *retrieval software*, the program that jumps into your CD-ROM data base and saves your information from drowning. (Remember that CD-ROM offers a sea of data 3000 floppy disks deep.)

Retrieval software drops crumbs on the path as you stumble through a jungle of information. It lets you trace your steps, and, if it's "intelligent," can remember how you thought, which items you found interesting—your personal style of reading the dictionary, for instance. This software could actually take some halting, but intelligent, steps toward knowledge.

Writing this column, I checked the words *data* and *knowledge* in *Webster's*. It wouldn't take much in the way of retrieval software to print their definitions from a CD-ROM dictionary: A data-base manager could do that.

But I want retrieval software that can pick up details the way I do: notice that *knowledge* is an old word, common in the 12th century A.D., while *data* was first spoken in English in 1646. It might notice that *knowledge* is pure Anglo-Saxon, *data* nothing but Latin. Next time, when I'm checking *killing* and *euthanasia*, my retrieval software would notice a similar distinction and give me something to think about: We seem to speak English when we know what we're saying and Latin when we're unsure or have something to hide.

More information isn't what I'm after—it's more intelligence. It's great that so much information is available—but I'd really like to see some thinking software. ■

68000 for your Apple UNDER \$200 !

Our line of hardware & software systems for Apple II+, IIe includes a 68008 card, assembler, & FORTH for under \$200 !

Write or call today for our 68008/6809 product catalog.



PO Box 696
Oak View, CA 93022 (805) 649-2833

Circle 67 on Reader Service Card.



FORMSWORKS

- 100 legal/business forms to use with Appleworks
- Save hundreds of dollars on legal fees
- Save hours of typing/clerical effort
- Legal consultant: Gerald Hecht, Esq
- 30 day free trial
- Master Card / Visa accepted

ONLY \$39.95

BRICKHOUSE SOFTWARE
PATTERSON, N.Y. 12563
(914) 878-2041

Circle 26 on Reader Service Card.

P-tral
BASIC to Pascal

\$179

TRANSLATOR

Converts Applesoft BASIC programs to readable and portable Apple Pascal. P-tral supports all BASIC instructions except Shape Commands, DOS Commands and Immediate Mode Instructions.

REQUIREMENTS: Apple II, II+, IIe or IIc. 64K or 128K RAM. DOS 3.3 or ProDOS. Apple Pascal 1.1, 1.2, 1.3.

FOR MORE INFORMATION CONTACT:
WOODCHUCK INDUSTRIES
340 WEST 17TH ST (#2B)
NEW YORK, NY 10011
(212) 924-0576 / 206-6490

Circle 174 on Reader Service Card.

INDEX TO ADVERTISERS

Reader Service	Page	Reader Service	Page
21 Alf Products	86	157 Int'l Apple Core	111
43 Ampro, Ltd.	103	231 Kraft Systems	58
* Applied Engineering	12, 13, 31, 41, 42, 43, 44, 61	28 Legend Industries	34
222 AST Research	2, 3	40 Little Brown & Co.	58
20 Atlatz Computer Supply	93	118 Marathon Software	77
229 Beagle Bros	108	6 Master Media Supplies	93
179 Beagle Bros	83	248 Meacom	90
26 Brickhouse Software	96	27 Minuteware	86
* Business Computers of Peterborough	52, 53	44 National On-Line Classifieds	103
233 Cauzin Systems	71	110 Northeastern Software	36, 37
62 Central Point Software	33	192 Norwich Data Services Ltd	102
60 Central Point Software	32	37 OKS	4
* Cheatsheet Products	72	64 PC Network Systems	93
227 Checkmate Technology	20	276 Pinpoint Publishing	107
18 C.H.I.C.	93	277 Pinpoint Publishing	107
Classified Ads	92	278 Pinpoint Publishing	107
257 CMC Computer Systems	110	29 Precision Data Products	102
79 Coit Valley Computers	26, 27	10 Pro APP	11
124 CompuServe Information Services	17	128 Programs Plus	18, 19
183 Computer Network	79	268 Prometheus Products	48
76 Computist	85	32 Pro-Tech-Tronics	50
163 Core Concepts	35	69 PSI	1
* Covox	99	38 Psychological Software	74
31 Creative Peripherals Unltd.	49	16 Quinsept	90
275 Dresselhaus	84	214 Rocky Mtn. Software	30
17 Dynamic Micro Systems	93	165 Roger Coats	23
148 Electronic Arts	CII	250 Roger Wagner Publishing	7
11 Fastfind	93	84 Sensible Software	89
259 First Line Software	59	85 Sensible Software	90
146 Golem Computers	73	86 Sensible Software	82
139 Gutenberg	87	242 Sensible Software	24
66 H&E Computronics	CIII	143 Silicon Express	62
254 H&M Disk Drives	88, 93	217 Software Touch, The	28
58 Human Systems Dynamics	110	* Southern California Research Group	77
inCider Magazine Back Issues	75	* Steinke	93
hotCider	64	67 Stellation Two	96
hotCider Back Issues	109	73 Street Electronics	CIV
* Information Appliance	86	156 Sublogic	98
9 Interactive Microware	99	252 Telemax	93
12 Interactive Microware	99	39 Thirdwave Technology	22
253 Interlude	9	15 Uptime	80
		264 Utilico Microware	91
		34 VIP Technology	45
		174 Woodchuck Industries	96

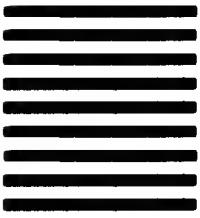
For further information from our advertisers, please use the Reader Service card.

Advertising Sales: East Coast Office (603) 924-7138
West Coast Office (415) 328-3470

*This advertiser prefers to be contacted directly.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES



BUSINESS REPLY MAIL

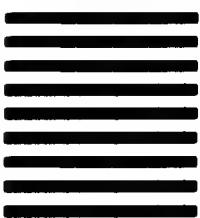
FIRST-CLASS MAIL PERMIT NO. 73 PETERBOROUGH, NH

POSTAGE WILL BE PAID BY ADDRESSEE

inCider
P.O. Box 336
Dalton, MA 01227



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 73 PETERBOROUGH, NH

POSTAGE WILL BE PAID BY ADDRESSEE

inCider
P.O. Box 336
Dalton, MA 01227

►“I've read every Apple magazine and I'm down to one and that's *inCider*. It's the best...I recommend it to all my Apple II clients.”

Merlin Wittenberg
Educational Consultant
Chattanooga, TN

TO

RECEIVE
MORE
INFOR-
MATION

TEAR

out the perforated card.
Please print or type your
name and address where
indicated.

CIRCLE

the numbers on the card
that correspond to the
reader service numbers
on the advertisements that
interest you.

ORDER

a one year subscription to
inCider by circling 400 on
the card.

MAIL

the card with your check,
money order or U.S.
currency to:
inCider
Reader Service Dept.
P.O. Box 336
Dalton, MA 01227
Or, you may request
billing.

LOOK FOR
your subscription in
10 to 12 weeks.

REMEMBER
the postage is on us.

inCider

THE APPLE II MAGAZINE

GAME ROOM



Move your troops through jungles and villages in *Nam*.

by Brian J. Murphy

In Game Room, Brian Murphy tells us what's new in the world of Apple games. Look here for inCider's scoop on the latest fun.

inCider's Ratings

★★★★★	Excellent
★★★★	Above average
★★★	Good enough
★★	Not up to standards
★	The empty set

Do you live for the thrill of combat? Does the smell of napalm in the morning remind you of victory? Do you long to don belts of machine-gun ammo and, like Rambo, wade into the Commie hordes with leaden death spewing from the white-hot mouth of your machine gun?

If your answer to those questions is yes, there's not much I can do to help you, because this month's featured games—*Nam* and *Panzer Grenadier*—only simulate those experiences.

But even without real blood, gore, danger, and death, they're still a lot of fun. On the other hand, there's **Battle Group**, a game that could give war and devastation a bad name.

But enough ironic commentary—battle calls! Forward to *Nam*! Backward to *Panzer Grenadier*!

Nam

★★★

Strategic Simulations

1046 North Rengstorff Avenue, Mountain View, CA 94043-1983
Any 48K Apple II; Applesoft and disk drive required, joystick optional
\$39.95

Panzer Grenadier

★★★

Strategic Simulations

Any 48K Apple II; Applesoft and disk drive required, joystick optional
\$39.95

From the point of view of ease of play and speed of execution, *Nam* and *Panzer Grenadier* are among the best tactical simulations I've seen. Instead of the hunt-and-peck process of other



Command German patrols in *Panzer Grenadier*.

war games' keyboard commands, these games are set up along the lines of an Atari or arcade battle. Joystick control of unit movements and combat decisions keeps the game moving along rapidly.

Each game offers a series of historic small-unit battles from their respective conflicts—Vietnam and World War II. Weapons and vehicles of the period are meticulously simulated.

In *Panzer Grenadier* you command German armor and infantry in a series of set-piece skirmishes with Red Army forces. In *Nam* you control American and South Vietnamese infantry, armor, and helicopter units against Viet Cong guerillas and North Vietnamese regulars.

While each scenario offers highly entertaining problems in tactics, terrain, and the use of firepower, the games' best feature is the joystick-control system. During the "movement" phase of a turn, you place a box cursor over the unit you want to move and activate it with a press of the fire button. The cursor turns

green to indicate the unit is ready to go, changing to orange as the unit reaches its limit of endurance. To assault an enemy position, you again place the cursor over the unit and move it into the enemy space. Combat results are displayed automatically.

During the "fire" phase of the turn, you place your cursor over the friendly unit and press the fire button. A cross-hairs appears in the cursor. Move the box over the target, press the fire button again, and the game reports one of four results—"Target Missed," "Target Hit," "Out of Range," or "No Line of Sight" (terrain or buildings between you and the target).

Of course, the enemy has his innings, too. He won't just sit there while you move, nor will he hold his fire while your troops sit in plain sight in some field. Roger Damon has programmed both games to offer vigorous opposition from wily, aggressive, uncannily accurate gunners. Accordingly, a few tips on strategy are in order.

For Apple II+,
Apple IIe, & Apple IIc

Flight Simulator II



Put yourself in the pilot's seat of a Piper 181 Cherokee Archer for an awe-inspiring flight over realistic scenery from New York to Los Angeles. High speed color-filled 3D graphics will give you a beautiful panoramic view as you practice takeoffs, landings, and aerobatics. Complete documentation will get you airborne quickly even if you've never flown before. When you think you're ready, you can play the World War I Ace aerial battle game. Flight Simulator II features include ■ animated color 3D graphics ■ day, dusk, and night flying modes ■ over 80 airports in four scenery areas: New York, Chicago, Los Angeles, Seattle, with additional scenery areas available ■ user-variable weather, from clear blue skies to grey cloudy conditions ■ complete flight instrumentation ■ VOR, ILS, ADF, and DME radio equipped ■ navigation facilities and course plotting ■ World War I Ace aerial battle game ■ complete information manual and flight handbook.

See your dealer . . .

or write or call for more information. For direct orders enclose \$49.95 plus \$2.00 for shipping and specify UPS or first class mail delivery. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800 / 637-4983

Circle 156 on Reader Service Card.

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

GAME ROOM



Do battle with armor and infantry in Battle Group.

Tip One: Keep your units under cover. Houses, trees, and brush (all indicated by the map graphics) reduce the probability of your unit's being spotted and sustaining damage.

Tip Two: Concentrate fire on the nearest enemies. Except for artillery, the closest enemies are the most dangerous—but also the easiest to eliminate.

Tip Three: Avoid attacks (the fighting that occurs when you move a unit onto an enemy unit, causing hand-to-hand combat). Assaulting enemy positions is the quickest way to weaken your troops to the point of elimination. If you concentrate your fire at the nearest enemy units you'll inflict maximum damage with minimum losses.

Tip Four: Don't move weakened units close to strong enemy units. Enemy fire could eliminate your unit when it gets up and tries to move.

Nam and Panzer Grenadier offer entertaining war gaming. The games take no time at all to learn and are very simple to operate, thus keeping the emphasis on strategy and action. This can't be said of Battle Group.

it to, Battle Group and its ancestor, Kampfgruppe, seem exceptionally unsatisfying. While all three programs in this month's Game Room are simulations of armor/infantry battles, Gary Grigsby's design for Battle Group is far inferior to Damon's for Nam and Grenadier.

Battle Group's complex game turns and reliance on keyboard commands make troop movement less precise, while combat results are less satisfying and exciting. It takes several steps to move a unit, to direct it toward the enemy, to aim at a target, and so forth. Commands specifying unit facings, speed, and so forth seem completely unnecessary.

It seems to me that the emphasis in Battle Group is on making the management of the battle as complicated as possible. Compared to Nam and Panzer Grenadier, my choices for the best small-unit war games for Apple, Battle Group and Kampfgruppe make me wonder if SSI rates a game "advanced" on the basis of its complicated commands or its play value and challenge. ■

Brian Murphy is anxious to learn what you think of the current state of computer games. Write him at inCider, Elm Street, Peterborough, NH 03458, and let him know your opinion.

Battle Group

★★

Strategic Simulations

Any 48K Apple II; Applesoft and disk drive required, joystick optional
\$39.95

Now that I have other Apple products to compare

\$5 TALKING DISK

OVER 100 WORDS in vocabularies that you can put into your own programs! No extra hardware required. Sample programs include:

- Talking four-function calculator — choose English, Spanish, or German.
- Talking keyboard — letters and punctuation in English.
- Demonstration of voice editing.

The \$5 Talking Disk is available for Commodore 64, 128, Atari 800, 800XL, 130XE, and Apple II+ (64K), IIe, and IIc.

If you want to make your own vocabularies, in any language or accent, then you must have a VOICE MASTER for processing speech input. VOICE MASTER lets you do much more: YOU CAN RECOGNIZE SPOKEN COMMANDS and WRITE MUSIC AS YOU HUM! And affordable too — under \$90 including the headset and microphone.

Send \$5 for the talking disk. Prepaid orders only. Includes postage. (\$7 outside USA, Canada, and Mexico.) Information on VOICE MASTER will accompany your disk. Or you can call or write for VOICE MASTER information separately. Please specify computer make and model with your order.



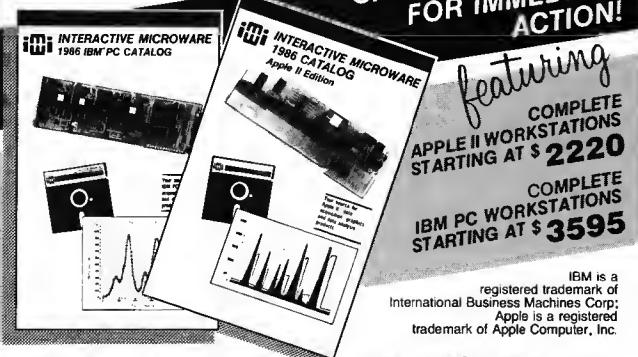
COVOX INC.
675 Conger St., Dept. IN
Eugene, OR 97402
Telephone (503) 342-1271

FREE! DATA ACQUISITION • GRAPHICS • DATA ANALYSIS PRODUCT CATALOGS FOR YOUR IBM or Apple PC

Interactive Microware offers a complete, low cost family of high quality hardware and software for Chromatography • Process Control • Spectrophotometry • Temperature Monitoring • Electrochemical Analysis • Atomic Absorption • Instrument Monitoring • Data Plotting • Curve Fitting • IR and UV/VIS Spectroscopy • Computer Assisted Design and Much More!

Thousands of clients worldwide use IMI products for Science, Engineering and Business Applications.

CALL (814) 238-8294
FOR IMMEDIATE
ACTION!



IBM 48 PAGES 94 PRODUCTS

APPLE 64 PAGES 264 PRODUCTS



INTERACTIVE MICROWARE, INC.
POB 139, Dept. 52, State College, PA 16804
Phone: (814) 238-8294 • Telex 705250

IBM is a registered trademark of International Business Machines Corp.
Apple is a registered trademark of Apple Computer, Inc.

Circle 9 for Apple

Circle 12 for IBM

NEW PRODUCTS

edited by Lafe Low

Hardware

Plug-in Keypad

Improve your spreadsheet or data base with C&M's Apple //c **numeric keypad** for swift numeric input. This plug-in keypad features numbers 1 through 0, a minus sign and period, right, left, and down cursor controls, and tab and enter keys. One version plugs in to stay and retails for \$99.95. The other, which you can unplug when you don't need it, costs \$119.95 from C&M Manufacturing, 2400 Avenue I, Huntsville, TX 77340, (409) 291-6005. Circle Reader Service number 361 for more information.

Buffer Storage

The Ramjet 256K **print buffer** fits between your Apple and printer, freeing your computer for work while you're printing. It's available in parallel and serial versions, and is compatible with either standard parallel or RS-232 printers. The Ramjet features 256K of memory, a pause mode for single sheets of paper, an anodized aluminum housing, and a UL/CSA-approved power supply. It sells for \$269 from Omnitronix, P.O. Box 43, Mercer Island, WA 98040, (206) 236-2983. For more information, circle Reader Service number 363.



The Ramjet gives you 256K of extra memory.



Protect your eyes in style with Bolle's Comput-Irex glasses.

Incognito Computing

Bolle America now offers **computer shades** for VDT users to reduce eyestrain. Bolle's Comput-Irex glasses filter 100 percent of ultraviolet and more than 90 percent of infrared light, while letting maximum visible light pass through. They come in four frame styles and a clip-on model. Comput-Irex lenses are made of virtually shatterproof, lightweight polycarbonate in sturdy nylon fashion frames. Contact Bolle America, 3890 Elm Street, Denver, CO 80207, (303) 321-4300, or circle Reader Service number 362 for more information.

Stand by Me

Store any printer on Curtis Manufacturing's Universal Printer Stand. This high-impact plastic stand, adjustable for both narrow- and wide-carriage printers, includes a removable paper tray to catch and stack printouts. This space saver retails for \$19.95 from Curtis Manufacturing, 305 Union Street, Peterborough, NH 03458, (603) 924-3823. Circle Reader Service number 364 for more information.

A Modem with More

Visionary Electronics has added a new Hayes-compatible, stand-alone, intelligent **modem**, the 1200XT, to its line. It runs at 300 or 1200 baud and features battery-backed memory, separate printer port, and internal clock/calendar. It can send, receive, and print messages automatically, even if the host computer is turned off. The Visionary 1200XT with 8K of RAM retails for \$495; each additional 8K costs \$20; a 48K 1200XT is \$595, from Visionary Electronics, 141 Parker Avenue, San Francisco, CA 94118, (415) 751-8811. Circle Reader Service number 350 for more information.

full-function business and scientific calculator, perpetual calendar, multipage notepad, appointment scheduler, Rolodex-type card filer, telecommunications package, and DOS or ProDOS commands. Put these accessories at your fingertips for \$39.95, from Synergistic Software, 830 North Riverside Drive, Suite 201, Renton, WA 98055, (206) 226-3216. Circle Reader Service number 350 for more information.

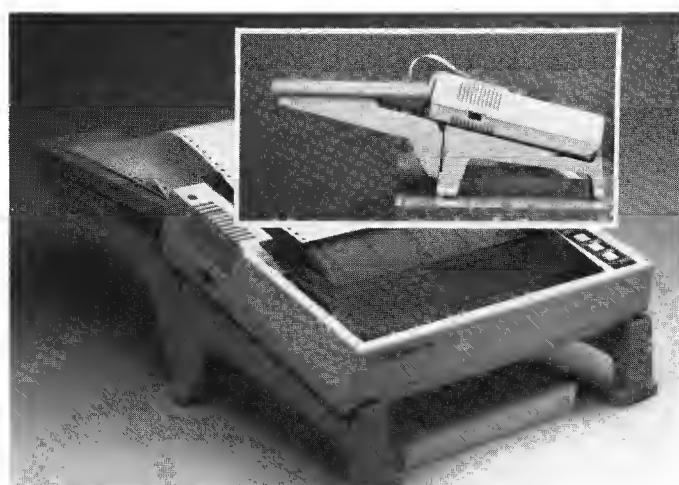
Be Your Own Boss

Introduce your youngsters to the basic concepts, terms, and applications of **managing a business**. Junior Manager simulates the ridiculous, as well as the demanding, things that happen in running a business. Kids can create financial reports, handle customer services, and cope with customer relations. Your kids can be their own boss, for \$19.95, from Computer Alternatives, 4025 Laguna Avenue, Palo Alto, CA 94306, (415) 493-7564. Circle Reader Service number 370 for more information.

Software

At Your Fingertips

Fingertips makes scheduling, organization, calculations, and other **desktop tasks** accessible in the background while you're using your favorite Apple program. With a single key-stroke, you can call on a



Curtis' printer stand will keep your printer in place.

Safe and Sound

PCSecure is a fast, simple **data-encryption** program using a key-driven code. (Type a key to encode a file, and the same key will decode it.) For added security, PCSecure uses multistage encryption. Even if a nonauthorized user is just one digit away from cracking the code, PCSecure gives no indication. Protect your files for \$49.50, from SourceView Software International, 835 Castro Street, Martinez, CA 94553, (415) 228-6220. Circle Reader Service number 369 for more information.

The Write Stuff

Writer's Helper is a collection of programs designed to help students **organize ideas**, and put those ideas in writing. Writer's Helper works with standard ASCII text files and Bank Street Writer. Both DOS 3.3 and ProDOS versions are on the disk. Write to Conduit, University of Iowa, Oakdale Campus, Iowa City, IA 52242, (319) 353-5789, or circle Reader Service number 371 for more information.

Historic Battles

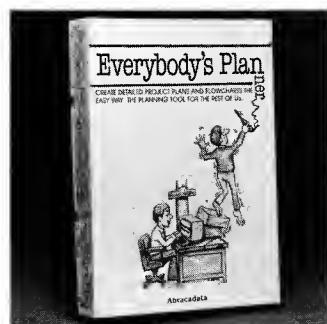
Conflict in Vietnam follows five separate battles that were pivotal in the **war in Vietnam**. Conflict in Vietnam is the third in Microsoft's Command Series, which includes Crusade in Europe and Decision in the Desert. The simulations retail for \$39.95 each, from Microsoft Software, 120 Lakefront Drive, Hunt Valley, MD 21030, (301) 667-1151. For more information, circle Reader Service number 358.

Science Simulations

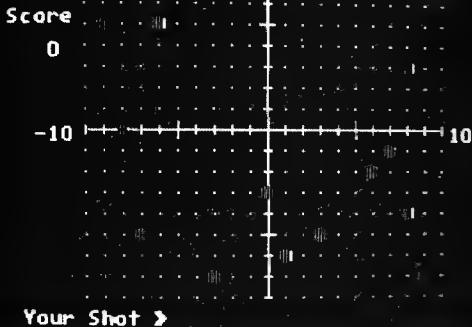
High-school biology students can study **science topics** through familiar scenarios. Q.E.D.'s new simulations—Designer Genes, Natural Causes, and Bee-Cause—teach students about human genetics, relationships among predators, prey, and the environment, and the scientific method. Bee-Cause retails for \$40, the others for \$50 each, from Q.E.D., P.O. Box 5037, Kent, WA 98064, (206) 630-2054. Circle Reader Service number 360 for more information.

Project Planning

Keep track of your projects with Everybody's Planner, a **planning tool** with two complete programs—Schedules and Flowcharts. The package features pull-down menus, quick command cards, and two simple tutorials. Plans for your project can be up to five years long, using as many as six screens for your schedule. Everybody's Planner retails for \$99.95, from Abracadada, P.O. Box 2352, Eugene, OR 97402, (503) 342-3030. Circle Reader Service number 355 for more information.



Keep your schedule organized with Everybody's Planner.



Green Globs and Graphing Equations can teach you math.

Easy Input

Programmers, make it easy for users of your Applesoft BASIC programs to input information. The Mapped Page lets you specify **spreadsheet-style input formats** in your programs. The user can assess all of his or her data before processing, and can enter information only where your design allows. Be kind to data-entry typists with The Mapped Page, \$39.95 from Miller Associates, 6744 Ransome Drive, Baltimore, MD 21207, (301) 944-0708. Circle Reader Service number 353 for more information.

Globs of Fun

Green Globs and Graphing Equations is a collection of four programs that provide students with new ways to learn **trigonometric and algebraic functions**. Green Globs challenges students to write equations for graphs that will hit as many of the 13 "green globes" on the screen as possible. The other programs—Tracker, Linear and Quadratic Graphs, and Equation Plotter—cover other algebraic functions. The set is priced at \$59, from Sunburst Communications, 39 Washington Avenue, Pleasantville, NY 10570, (914) 769-5030. Circle Reader Service number 359 for more information.

Look into My Screen

Hypnosis produces optical and auditory stimulation to aid in suggestive relaxation, behavior modification, and **trance induction**. Designed for professionals and students of the medical and psychological uses of hypnotic trance, Hypnosis is \$20, from Audent, 1000 North Avenue, Waukegan, IL 60085, (312) 223-5077. Circle Reader Service number 357 for more information.

Product descriptions contained in this section are based on information supplied to us by the respective manufacturers. These announcements are provided solely as a service to our readers and do not constitute endorsement by inCider of any given product.

APPLE(II+)WORKS™ PLUS-WORKS™ It really Works!!

PLUS-WORKS not only allows you to have all features of AppleWorks™ on an Apple II™, II+ or compatible, but our extended memory versions give you capabilities far beyond the standard IIe/c versions. It's great for expansion on the Apple IIe as well.

Compare these features with other AppleWorks patch programs

- Copyable - make backups, transfer to hard disk
- Up to 1 megabyte of desktop space available
- Database expansion to more than 4,200 records
- All IIc control codes available to printer with any keyboard
- Supports Franklin computers and all full ASCII keyboards
- Supports all major 80 column cards
- Permanent and dynamic ram disk features
- All versions of AppleWorks supported, even V1.3
- Optional patch to help with printer problems

PLUS-WORKS - \$19.95 plus \$3.00 ship/hand. Requires AppleWorks, 64K Apple II+ or compat, 80 col card and shift key mod. Maximum desktop 10K. Upgrade to XM for \$30.00. Special Laser 3000 10K only version available (Plus-Works-L)

PLUS-WORKS-XM - \$49.95 plus \$3.00 ship/hand. Requires same as above with legend, saturn, or compatible ram card (Big board, know drive, prometheus, etc), Apple's memory card, Microtek, Orbital, PCPI & Micropro CP/M, IBS AP33, or Apple IIe with peripheral slot ramcard. Special Basic 108 version available (PLUS-WORKS-XMB)

PLUS-WORKS-XM & 256K Apple mem card (expandable to 1 meg) - \$295.00

MC/Visa add 4%
Information & NJ residents call 516-922-9584
or send check or money order to:

Norwich Data Services Ltd.
PO Box 356 • E. Norwich, NY 11732
NYS residents add sales tax
Apple & Appleworks are trademarks of Apple Computer Corp.
PLUS-WORKS is a trademark of Norwich Data Services Ltd.

Circle 192 on Reader Service Card.

NEW PRODUCTS

A Revealing List

XREFplus 2.4 can generate easy-to-read **listings** of any program. It indents IF...THEN...ELSE statements to correspond to the flow of control, and statements in FOR...NEXT loops to highlight program structure. You can also print formatted and cross-referenced listings, a list of every variable name, and a table of every direct-transfer and subroutine line number. XREFplus 2.4 retails for \$49.50, from SourceView Software International, 835 Castro Street, Martinez, CA 94553, (415) 228-6228. Circle Reader Service number 356 for more information.

Catch your mistakes for \$49.95 (plus \$2 shipping), from Quorum, P.O. Box 2134WCF, Oakland, CA 94621, (800) 222-2824, (800) 222-2812 within California. Circle Reader Service number 356 for more information.

Get On Line

If you use AppleWorks, you can use CommWorks. This new **telecommunications** package lets you save frequently used communications parameters and offers automatic log-on, macro commands, and a text editor, all guided by the familiar folder-menu interface. CommWorks is compatible with most popular modems, and works with Jeeves and Catalyst 3.0. CommWorks is available for \$95 from PBI Software, 1111 Triton Drive, Foster City, CA 94404, (415) 349-8765. For more information, circle Reader Service number 352 for further information.

Printing Finesse

Pascal programmers can now **customize text** according to any specifications or print style. *Form handles documents of any size for any printer, with such formatting features as margins, justification, titles, footnotes, tabbing, indexing, multiple columns, underlining, boldface, superscript, and subscript. The text editor with formatter is \$34 (\$75 with source code), from dogStar Software, P.O. Box 302, Bloomington, IN 47402, (812) 333-5616. For more information, circle Reader Service number 351.

Resources

Apple SIG

The Source is offering a new **Apple special-interest group (SIG)** featuring product reviews, free software available for downloading, special bulletin boards, an Apple bulletin-board directory, and other information of interest to Apple II users. The price of accessing SIGs on The Source starts at 10 cents per minute (\$6 per hour), plus the usual Source membership fee of \$49.95. Software on the Apple SIG can be downloaded with Kermit/Super Kermit protocol, and soon with XModem. For more information, contact Source Telecomputing Corporation, 1616 Anderson Road, McLean, VA 22102, (800) 336-3366, or circle Reader Service number 365.

The Hidden Editor

Spellbound, a **spelling checker** that fits on your AppleWorks disk, can fix errors before you even know you made them. An Autopilot feature automatically swaps incorrect words with Spellbound's first guess; if you'd like more control, the program will suggest a corrected spelling before inserting it. Spellbound works from two word lists—most frequently used and most frequently misspelled English words.

pd
Precision Data Products
**Complete Line of Quality
Supplies for Your Computer**

**TOLL FREE
ORDER LINE**
800-258-0028
FOR INFORMATION CALL
616-452-3457

INTRODUCING
STATE-OF-THE-ART MAGNETIC MEDIA
RIGOROUS QUALITY CHECKS ENSURE THEIR RELIABILITY
FROM ONE OF THE LEADING MAGNETIC MANUFACTURERS IN THE WORLD

5 1/4" DISKETTES

- With Hub Rings
- With Write Protect Tabs
- With Static-Free, Dust-Free Envelopes
- With User ID Labels
- In Factory Sealed Poly Packs

(YOU GET EVERYTHING BUT THE BOX) — PRICES ARE PER DISK

QTY.	50	100	500	1000
SSDD	.59	.53	.50	.47
DSDD	.62	.58	.55	.52

wabash 3 1/2" DISKETTES
25/POLY PACK

Single Side HD 135TPI . . . \$1.40 ea. Double Side HD 135TPI . . . \$1.65 ea.
INDIVIDUALLY CERTIFIED 100% ERROR FREE • COVERED BY A FULL LIFETIME WARRANTY
(MEET OR EXCEED APPLICABLE ANSI, ECMA, ISO STANDARDS)

DISK HOLDER 3.5 Holds 40 diskettes . . . \$8.50 (delivered price)

PRINTER RIBBONS
Quality replacements for most popular printers

Apple ImageWriter . . . \$3.95 ea.	Okiidata 80/82/83 . . . \$1.75 ea.
Apple Scribe . . . \$2.95 ea.	Toshiba 1350 . . . \$4.89 ea.
Epson LX 80/90 . . . \$2.95 ea.	Minimum: 6 ribbons

Minimum order \$25.00. Add 10% for less than 50 diskettes. **Shipping and Handling:** \$4.00 per 100 diskettes. Continental U.S.A. APO/FPO, add \$8.00 per 100 diskettes. Reduced shipping charge for larger quantities. C.O.D. add \$4.00. Cash or certified check. MI residents add 4% sales tax. Prices subject to change without notice. HOURS: 6:30 AM-9:00 PM Eastern Time.

Precision Data Products
P.O. Box 8367, Grand Rapids, MI 49518
(616) 452-3457 • Michigan 1-800-632-2468
Outside Michigan 1-800-258-0028





Product Updates

- **Worksheet Wizard I:** Whole Numbers has two new companions—**Worksheet Wizard II: Fractions** and **Worksheet Wizard III: Decimals**.

These worksheet generators let students practice their skills in each area. Contact EduSoft, P.O. Box 2560, Berkeley, CA 94702, (800) EDU-SOFT (415-548-2304 from California, Hawaii, or Arkansas).

- **Super BoulderDash** includes the original BoulderDash arcade game and the sequel, BoulderDash II. Rockford, the sneaker-clad hero of the game, has 16 new caves to explore at five levels. This arcade avalanche is from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.

- AV Systems' new series, **Apple Tree User Systems**, includes 48 games, simulations, and educational programs per disk, all for \$9.95 each. Every disk comes with a ten-day free trial and free site licensing for schools. Contact Adrian Vance, AV Systems, P.O. Box 49210, Los Angeles, CA 90049, (213) 476-3311.

- The PFS series is now bundled in one convenient, integrated package. **PFS:Workmates** includes PFS:Write (with integrated spelling checker), File, Report, and Plan. Programs come on 5 1/4-inch disks or on one 3 1/2-inch disk, from Software Publishing, 1901 Landings Drive, Mountain View, CA 94039, (415) 962-8910.

- Desktop accessories have been added to Artsci's word processor Magic Window //e. With **Magic Window //extra**, you can access a calculator, notepad, card filer, calendar, scheduler, and telecommunications module while the program is running. And all your old files are compatible with the new disk. Contact Artsci, 5547 North Satusma Avenue, North Hollywood, CA 91601, (818) 985-2922.

- Isolated information professionals can benefit from peer interaction on the **Network of Online Professionals**. It's open to any experienced information professional who frequently uses on-line data bases. You can access the network on Dialmail, the Dialog E-mail service, and the only cost is Dialmail connect time. For details contact John Everett at P.O. Box 157007, Irving, TX 75015, (214) 253-9311.

- **DavkaGraphics** contains 63 symbols of Jewish life to use with Broderbund's Print Shop. Pictures on the disk cover a wide range of subjects and include such items as a map of Israel and drawings of a Hasid, Sabbath candles, and a Kiddush cup. DavkaGraphics also contains a Hebrew font you can use with Print Shop Companion modifications. Contact Davka, 845 North Michigan Avenue, Chicago, IL 60611, (312) 944-4070.

CIRTECH FLIPSTER 1 MEGABYTE RAM CARD

- DOS 3.3, ProDOS, CP/M, Pascal compatible
- Partitioning
- Increased AppleWorks desktop to 1012K
- Apple II, II+, IIe, Franklin Ace 1000, 2000, Laser 128 compatible
- Software included

REG. \$399 OUR PRICE \$299

Credit card orders call TOLL FREE 800-828-3399

Inquiries call: 612-546-5353

Ampro Ltd.

755 Florida Ave. So., Minneapolis, MN 55426

Circle 43 on Reader Service Card

Job Candidates & Consultants: SCOUT THE WHOLE JOB MARKET—INSTANTLY!

ADNET™ is looking for Job Seekers and Consulting Specialists who want to make the process of finding permanent and temporary positions easy, economical, confidential—and instantaneous.

The ADNET™ System is the first computer network that links all sides of the active job market—employers with positions to fill, job candidates, personnel agents and consulting firms.

You can be part of the ADNET revolution!

For a **free demonstration** of ADNET, get a local dial-in number from our telecommunications network—(800) 821-5340—and sign-on (ASCII, 7 bits, 1 stop bit, no parity, 300/1200 Baud modem set at full duplex).

At IX1 or L?	Type: Return • Return
Service:	Type: ADNET
Please login:	Type: login jobdemo
Password:	Type: hire (this will be encrypted)

If you don't have a computer with modem handy, check with a reputable personnel firm. They can list your availability, skills and employment criteria on-line. Or call ADNET to list you on the system. For only \$19.50 you will be listed for 8 full weeks and receive 2 printouts of matching jobs, 1 when listed and another after the fourth week. All electronic mail will be printed and sent to your home. Please be prepared with a major credit card—call us at (516) 481-9222.

ADNET™
YOUR ELECTRONIC JOB MARKET

A service of **NATIONAL ON-LINE CLASSIFIED, INC.**
PO Box 170, East Meadow, New York 11554

Circle 44 on Reader Service Card.

HINTS/TECHNIQUES

Apple users know that there's always an easier way to get the job done. A shortcut here, an elegant twist there. That's what *Hints/Techniques* is all about. It's an information swap for readers who want to share their programming pointers, DOS tips, hardware secrets, AppleWorks applications, WPL enhancements, and all those other insights that make you go "Aha!" in the night. So read on and see if you don't find just the solution you've been looking for.

Computed GOTO's

by Arthur Levesque

Even beginning Applesoft programmers are familiar with the GOTO statement. GOTO transfers control of the program to the line following the statement, to make branching and loops possible. If you're an old-timer, you'll recall that Integer BASIC, which was built into pre-1978 Apple II's, included a Computed GOTO statement. Now, with the help of an ampersand utility, you can add Computed GOTO's to Applesoft.

First type in and save **Listing 1** as a text file. Then to use Computed GOTO's in your programs, type EXEC GOTO after booting the disk to which you saved the utility. This loads the routine as an Applesoft subroutine that becomes part of any Applesoft program you write.

Line 5 calls the routine, which resides in lines 50000 through 50010 (be sure you don't use those line numbers in your programs). When you RUN a program containing the Computed GOTO subroutine, the program POKEs the routine into memory before executing other instructions.

The general form of the Computed GOTO is &GOTO expression, where expression is a numeric variable, such

as X1 or COUNT, or an arithmetic expression, such as 500-X. In many instances, Computed GOTO's are much simpler to use than the Applesoft ON GOTO statement. Computed GOTO's can also make your programs easier to read and understand: You can GOTO named subroutines, such as &GOTO SCORE and &GOTO END, then identify them with REM statements. ■

Write to Arthur Levesque at 60 Homestead Avenue, North Smithfield, RI 02895.

GET Enhancement

by John T. White

One of the most useful programming commands in Applesoft BASIC is the GET statement. You can use it to accommodate a number of user actions—everything from "press any key to continue" to multiple-choice test-answer selections.

GET's primary function is to stop a running program and wait for a single key press. In string form (such as GET A\$), hitting any single key will make program execution continue. Unlike the INPUT command, GET doesn't require you to hit the return key.

Two types of computer users foil the good intentions of even the most dedicated programmer, though. First, there's the "nervous newcomer," who often ends up doing a "stutter step" on a selected key. This not only satisfies the present GET command, but deposits the extra key presses in the keyboard buffer (a temporary storage area). If your computer encounters another GET statement, these characters are more than happy to override the intended pause. In the blink of an eye, whatever you were supposed to see is gone.

Listing 1. Computed GOTO for Applesoft.

```
5 GOSUB 50000
50000 FOR N = 0 TO 13: READ P: POKE 768 + N, P: NEXT
50001 DATA 169, 171, 32, 192, 222, 32, 103, 221, 32, 82, 231, 76, 65, 217
50005 FOR N = 0 TO 2: READ P: POKE 1013 + N, P: NEXT
50010 DATA 76, 0, 3: RETURN
```

The second abuser is the "bored know-it-all." This person gets tired of waiting: His impatience brings about the same result.

When programming for others, it's a good idea to anticipate possible problems. To wipe out any stray characters that might trigger premature program continuation, insert the line POKE 49168,0 (or POKE -16368,0, if you prefer negative numbers) before each GET statement. This one simple addition clears the keyboard buffer just before GET halts the program's action. ■

Write to John White at Route #1, Box 252, Arrington, VA 22922.

Improving TIME

by Frank Brown

The TIME file on Apple's BASIC Programming with ProDOS /EXAMPLES disk (in the /EXTRAS directory) is the seed for a great start-up program for Apples without clock cards.

Since the time and date are lost on reboot or power-off, it's useful to run the program regularly after turning your computer on. Renaming the program Startup and saving it to a ProDOS disk will make BASIC.SYSTEM automatically run the program on boot, thus ensuring that all files will be date- and time-stamped when you save them.

By changing a few lines, you can greatly enhance the program's operation. With these modifications, your Apple will accept lowercase input while setting the date, let you skip setting the time, and give you a catalog each time you boot the disk.

One of the improvements Apple made to both ProDOS and Applesoft ROM was allowing lowercase keyboard input—but its own program to set time and date refuses to accept lowercase input when asking for the month. To remedy this needlessly frustrating situation, simply change TIME's line 585 to the following:

```
585 GET A$: IF ASC(A$) > 90 THEN
      A$ = CHR$(ASC(A$) - 32)
      586 M1$ = M1$ + A$: ? A$; MM = 4
```

Now, wouldn't it be nice if your Apple didn't ask you if you wanted to

reset the date and time every single time you ran BASIC.SYSTEM? Shouldn't your machine "know" whether or not you've already set the date?

Of course it should. Adding the following lines to the beginning of TIME gives your Apple the ability to check:

```
5 YY = INT (PEEK (49041) / 2): IF
  YY < > 0 THEN 1345
1345 ? CHR$(4) ; "PR#3" ; ?CHR$(4);
  "CATALOG,TDIR"
```

If you haven't set the date and time, the program will offer you that option. If you have, the program will assume you don't want to reset them and give you a disk catalog (or whatever else you may have programmed in at line 1345). ProDOS lets you use the T option to specify catalogs of files of particular types. (I use the syntax TDIR on my hard disk to list only subdirectory files.)

The escape key has become a common way of exiting from programs. The following lines let the program accept this key as well as N as a negative response to the question SET DATE & TIME? and let you exit leaving the time unset. After you answer Y to CORRECT (Y/N)?, hitting the escape key tells the program you don't want to set the time. (It will display 0:00 in the ProDOS catalog.) We'll program this by adding lines 505, 925, and 1265, and changing line 920:

```
505 IF A$ = CHR$(27) THEN 1345
920 GET A$: IF A$ = CHR$(27) THEN
  SKP = 1: GOTO 1240
925 IF (A$ < "0") OR (A$ > "1")
  GOTO 910
1265 IF SK THEN GOTO 1345
```

CHR\$(27) is the ASCII code for the escape key. Line 920 checks to see if you've pressed it; if you have, a flag called SKP is set, and the program bypasses the set-time routine and goes to line 1240, the beginning of the routine that updates the system date. Line 1265 checks to see if SKP is set; if it is, the program won't try to set the time, but instead jumps to your ending instruction (in this case, the CATALOG command).

These simple changes add up to a pretty decent start-up program. Now whenever you save files, your Apple will include the date and time, some useful bits of catalog information for comparing files. ■

Write to Frank Brown at 911 St. Michael, Tallahassee, FL 32301.

ProDOS Portal

by David O. Bone

In the December 1985 issue of *inCider* (p. 150), Brian Parry released an updated 80-column version of his window routine—Portal2E for Apple //e users. It's a great DOS 3.3 routine, but when you use it with Apple ProDOS, closing a window makes your disk drives cycle. In addition, when you issue a DOS command, the object code in memory is history.

To modify it for ProDOS use, first type in Portal2E from the December issue, or BLOAD it from your disk. Add **Listing 2** and BSAVE it as PRO.PORTAL.OBJ,A\$7BFA,L\$1E3. Then use ProDOS Filer to convert it to ProDOS format. Make the changes shown in **Listing 3** to December's Portal2E demo BASIC program to complete the conversion (for unenhanced //e's only).

If you'd like to create a blank window without an inverse border, POKE 32103,132 before you issue the open command. To reinstate the inverse border, POKE 32103,128. To perma-

nently erase the inverse border, add line 7D66: 20 84 FE to **Listing 2** before the BSAVE command.

When your computer draws a single-line box inside a noninverse-bordered window from BASIC, you lose the effect of a quick window because of the time involved in drawing the box and filling it with text. To get a fast-opening window with a single line around it, start again with the original Portal2E OBJ. Add **Listing 4** to it, and BSAVE it as object file PRO.PORTAL.OBJ,A\$7B90,L\$024C. Convert it to ProDOS, modify the BASIC demo program as outlined above, and you have a quick, clean, single-outline window.

Both these modifications not only allow ProDOS usage, but will set HI-MEM and the buffers necessary to

Listing 2. Portal2E ProDOS patch.

7BFA-	A9	1F	20	F5	BE	60	00	00
7C96-	60	00	00	00				

Listing 3. Portal2E demo ProDOS patch.

```
100 PRINT CHR$(4) ; "-PRO.PORTAL.OBJ": POKE 1014,0: POKE 1015,124
110 PRINT CHR$(4) ; "PR#3": PRINT": POKE 768,0
```

Listing 4. Portal2E ProDOS patch to produce quick single-outline windows.

7B90-	A9	1F	20	F5	BE	60	00	00
7B98-	A5	20	6D	02	03	8D	05	03
7BA0-	CE	05	03	CE	05	03	CE	05
7BA8-	03	AD	03	03	20	C1	FB	A9
7BB0-	DF	A4	20	C8	20	EF	7B	AD
7BB8-	03	03	6D	04	03	8D	07	03
7BC0-	CE	07	03	AD	07	03	20	C1
7BC8-	FB	CE	02	03	A4	20	A9	DF
7BD0-	20	EF	7B	AE	03	03	E8	8A
7BD8-	20	C1	FB	A9	FC	A4	20	20
7BE0-	F2	CE	AC	05	03	20	F2	CE
7BE8-	EC	07	03	90	E9	60	00	20
7BF0-	F2	CE	C8	CC	05	03	90	F7
7BF8-	60	00	00					
7C96-	60	00	00	00				
7D66-	20	58	FC	20	98	7B	4C	6F
7D81-	4C	87	7D					

protect the object program. You can also run or chain various BASIC programs and open data files without resetting the window program. ■

Write to David Bone at 827 Columbine Street, Sterling, CO 80751.

Transfer

by Harold D. Portnoy

The accompanying program, Transfer (see **Listing 5**), gives you a convenient way to transfer selected files from disk to the ProDOS RAM drive. You can choose files in either the volume directory or one of the subdirectories—up to 51 files in any one of 11 directories. You can also edit the program so that on booting you can transfer preselected files to /RAM.

Transfer's main menu permits selection of the volume directory or others. Using the up- and down-arrow keys (which move a light-bar selector), choose the files you want to transfer and mark/unmark them with the right and left arrows.

If you choose the subdirectory option, the program displays up to 11 unlocked directory files listed in the volume directory. You can select any one of them and ask the program to display its unlocked files. Again, you can mark any file for transfer.

By adding the following three lines to Transfer and using a short start-up program (such as that in **Listing 6**), the program can automatically transfer preselected files to /RAM:

```
155 GOTO 410
565 GOTO 590
625 GOTO 640
```

Setting the prefix in the start-up program transfers unlocked files in any directory, not just files in the volume directory. For example, the start-up program in **Listing 6** transfers all unlocked files in the directory **UTILITY**, of the volume directory **MY.DISK**.

For readers with expanded RAM drives, be sure to run the driver program for your expansion card before you run Transfer. ■

Write to Harold D. Portnoy at 1431 Woodward, Bloomfield Hills, MI 48013.

80-Column Listing

by Vera Bagboudarian

To print a program in 80-column format, type **Listing 7** into a text file

Listing 5. Transfer.

```

10 REM ****
20 REM FILE TRANSFER PROGRAM
30 REM by
40 REM Harold D. Portnoy
50 REM ****
60 REM This program will transfer unlocked files in the volume
70 REM directory to /RAM. Any driver for expanding RAM should be
80 REM run before this program
90 REM
100 PRINT CHR$(4); "PR#3": HOME
110 GOSUB 1260
120 ONERR GOTO 1180
130 DIM LS$(50): DIM TS$(50): DIM L$(50): DIM CK(50)
140 DEF FN VERT(X) = X - INT(X / R1) * R1 + R2: DEF FN HRZ(Y) =
25 * INT(Y / R1) + C1: REM VERTICAL AND HORIZONTAL POSITION FOR
LIGHT BAR SELECTOR.
150 PRINT CHR$(4); "PREFIX ": INPUT V$: IF V$ = "/RAM/" THEN RM = 1:
GOTO 860: REM read prefix
160 REM main menu
170 HOME : VTAB 2: HTAB 29: PRINT "/RAM FILE TRANSFER"
180 PRINT : HTAB 28: PRINT "by Harold D. Portnoy"
190 VTAB 5: GOSUB 1110: VTAB 10: HTAB 25: PRINT "Volume prefix: "; V$ 
200 PRINT : VTAB 20: GOSUB 1110: GOSUB 1120: GOSUB 1130
210 LS$(0) = "Select Volume Directory": L$(1) = "Select
Subdirectory": L$(2) = "Quit": R1 = 3: R2 = 12: C1 = 28: N = 2: M1 = 1: M2 =
23: AR = 0: GOSUB 900
220 ON M + 1 GOTO 410, 240, 850
230 REM read unlocked directories from volume directory
240 HOME : VTAB 2: HTAB 25: PRINT "Processing Unlocked Directories": 
HTAB 30: PRINT "Prefix: "; V$: GOSUB 1110
250 PRINT : VTAB 20: GOSUB 1110: GOSUB 1120: GOSUB 1130: GOSUB 1140
260 PRINT CHR$(4); "OPEN"; V$; ", TDIR": REM look at volume directory
file
270 PRINT CHR$(4); "READ"; V$: INPUT LS$: INPUT LS$: INPUT LS$
280 AR = 0: R1 = 4: R2 = 8: C1 = 3: M1 = 2: M2 = 15
290 FOR K = 0 TO 10
300 INPUT LS$(K): ON ( MID$(LS$(K), 18, 3) = "DIR") * ( LEFT$(LS$(K), 1) =
" ") GOTO 310: ON LS$(K) = "" GOTO 320: GOTO 300
310 VTAB FN VERT(K): POKE 36, FN HRZ(K): PRINT MID$(LS$(K), M1, M2); :
GOTO 330
320 N = K - 1: K = 10
330 NEXT
340 PRINT CHR$(4); "close"
350 IF N < 0 THEN VTAB 12: HTAB 29: PRINT "No unlocked directories
": PRINT : VTAB 20: GOSUB 1110: VTAB 21: PRINT CHR$(11): VTAB 22:
PRINT "To re-start: Press RETURN "; : GET A$: GOTO 150
360 GOSUB 900
370 IF A$ = CHR$(32) THEN 830
380 LS$ = LS$(M): GOSUB 1050
390 V$ = V$ + M$ + "/"
400 REM read unlocked files from subdirectory
410 HOME : VTAB 1: HTAB 28: PRINT "Processing Unlocked Files": HTAB
30: PRINT "PREFIX: "; V$: GOSUB 1110: PRINT
420 PRINT : VTAB 21: GOSUB 1110: GOSUB 1120: GOSUB 1150
430 PRINT CHR$(4); "prefix"; V$ 
440 PRINT CHR$(4); "OPEN"; V$; ", TDIR"
450 PRINT CHR$(4); "READ"; V$: INPUT LS$: INPUT LS$: INPUT LS$
460 AR = 1: R1 = 17: R2 = 4: C1 = 3: M1 = 1: M2 = 19
470 FOR K = 0 TO 50
480 INPUT LS$: TS$(K) = MID$(LS$, 18, 3): ON TS$(K) = "DIR" GOTO 480: ON
LEFT$(LS$, 1) = " " GOTO 490: ON LS$ = "" GOTO 530: GOTO 480: REM GET
UNLOCKED FILES
490 LS$(K) = MID$(LS$, 2, 19): L$(K) = VAL ( MID$(LS$, 64, 8)): REM
obtain file name and length
500 VTAB FN VERT(K): POKE 36, FN HRZ(K): PRINT MID$(LS$(K), M1, M2); :
510 GOSUB 1050
520 LS$(K) = M$: GOTO 540
530 N = K - 1: K = 50
540 NEXT K
550 PRINT CHR$(4); "CLOSE"
560 IF N < 0 THEN HOME : VTAB 4: HTAB 30: PRINT "Prefix: "; V$: VTAB
5: GOSUB 1110: VTAB 20: GOSUB 1110: VTAB 9: HTAB 33: PRINT "No
unlocked files.": PRINT : GOTO 830
570 GOSUB 900
580 REM next section transfers each file as a T-Type to a buffer at
$2000-$7000. Then transfers the file to the RAM disk. ProDOS MLI
CALLused to reset file information.

```

Listing continued.

InfoMerge

For AppleWorks™

\$79

On-screen, direct-print mail merge program.

Uses AppleWorks database and word processor files, direct database manipulation.

Local/global keyboard inputs, field calculations, automatic reformatting, optional on-screen formatted print preview, and more.

Works with Pinpoint!

Pinpoint

24 Hour Toll Free Order Phone

800-633-2252/Ext. 580

Circle 276 on Reader Service Card.

Micro Cookbook

\$49.95

Instant Menu Planner

3,000 Recipes Available

Adjusts Ingredients for Number of Servings

Valuable On-Line Reference
Automatic Shopping Lists

Pinpoint

24 Hour Toll Free Order Phone

800-633-2252/Ext. 580

Circle 277 on Reader Service Card.

Point Point

by Gary Little

\$129

Powerful telecommunications software with AppleWorks™ filecard interface.

Send/receive files unattended (with clock), powerful programming macros eclipse AE Pro.

XMODEM binary/text file transfers, 2400 Baud modem support and more.

Works with Pinpoint on your Apple IIc/IIe!



Pinpoint

24 Hour Toll Free Order Phone

800-633-2252/Ext. 580

Box 1322, Octagon, Ct 39061

Circle 278 on Reader Service Card

Listing continued.

```
590 PRINT : VTAB 1: HTAB 26: PRINT "Transferring Files to /RAM "
600 REM transferring files from disk to RAM disk
610 FOR I = 0 TO N
620 PRINT CHR$(4); "FRE": REM keep garbage from overwriting
transfer buffer
630 IF NOT CK(I) THEN 790
640 VTAB FN VERT(I): POKE 36, FN HRZ(I) - 1: PRINT CHR$(15); CHR$(
27); "E"; CHR$(24); CHR$(14);
650 PRINT CHR$(4); "PREFIX"; V$#
660 L$ = L$(I): T$ = T$(I): L = L(I)
670 POKE 817,196: POKE 824,10: CALL 787,L$: REM GET_FILE_INFO
680 GOSUB 1230: REM ProDOS error
690 PRINT CHR$(4); "CREATE/RAM/"; L$; ",T"; T$
700 FOR B = 0 TO L STEP 20480
710 LN = L * (L < 20480) + 20480 * (L > = 20480)
720 PRINT CHR$(4); "BLOAD"; V$; L$; ",AS$2000,B"; B; ",L"; LN; ",T"; T$
730 PRINT CHR$(4); "BSAVE/RAM/"; L$; ",AS$2000,B"; B; ",L"; LN; ",T"; T$
740 L = L - 20480
750 NEXT
760 PRINT CHR$(4); "PREFIX /RAM"
770 POKE 817,195: POKE 824,7: CALL 787,L$: REM RE-SET_FILE_INFO TO
ORIGINAL SETTINGS
780 GOSUB 1230: REM ProDOS error
790 NEXT I
800 REM and finish
810 PRINT CHR$(4); "PREFIX /RAM"
820 HOME : PRINT : VTAB 3: HTAB 31: PRINT "File Transfer Complete":
HTAB 32: PRINT "Prefix: "; V$: PRINT : GOSUB 1110: VTAB 20: GOSUB 1110
830 L$(0) = "Select New Volume": L$(1) = "Select Present Prefix": L$(2)
= "Quit": R1 = 3: R2 = 12: C1 = 32: N = 2: M1 = 1: M2 = 23: AR = 0: GOSUB 900
840 ON M + 1 GOTO 860, 880
850 HOME : PRINT CHR$(17): END
860 HOME : VTAB 5: GOSUB 1110: VTAB 20: GOSUB 1110: ON RM GOSUB 1160:
VTAB 12: HTAB 25: PRINT "Insert new disc into Drive 1": VTAB 13: HTAB
25: PRINT "and press RETURN when ready. ";; GET A$: PRINT
870 PRINT CHR$(4); "PREFIX, D1": GOTO 150
880 PRINT CHR$(4); "PREFIX"; V$: GOTO 170
890 REM light bar selector
900 M = 0: GOTO 970
910 GET A$: IF A$ = CHR$(11) THEN M = (M - 1) * (M > 0) + N * (M =
0): GOTO 970
920 IF A$ = CHR$(10) THEN M = (M + 1) * (M < > N): GOTO 970
930 IF NOT AR THEN 960
940 IF A$ = CHR$(21) THEN CK$ = CHR$(15) + CHR$(27) + "D" +
CHR$(24) + CHR$(14): CK(M) = 1: GOTO 1000
950 IF A$ = CHR$(8) THEN CK$ = ":"; CK(M) = 0: GOTO 1000
960 ON (A$ = CHR$(13)) + (A$ = CHR$(32)) GOTO 1020: GOTO 910
970 P = (M - 1) * (M > 0) + N * (M < 1): VTAB FN VERT(P): POKE 36, FN
HRZ(P): PRINT MID$(L$(P), M1, M2);
980 P = (M + 1) * (M < N) + N * (M = N): VTAB FN VERT(P): POKE 36, FN
HRZ(P): PRINT MID$(L$(P), M1, M2);
990 VTAB FN VERT(M): POKE 36, FN HRZ(M): PRINT CHR$(15); MID$(
L$(M), M1, M2); CHR$(14);: GOTO 910
1000 VTAB FN VERT(M): POKE 36, FN HRZ(M) - 1: PRINT CK$;: GOTO 990
1010 GOTO 910
1020 VTAB FN VERT(M): POKE 36, FN HRZ(M): PRINT MID$(L$(M), M1, M2);
1030 RETURN
1040 REM remove spaces from file name
1050 M$ = ""
1060 FOR J = 2 TO 16: A$ = MID$(L$, J, 1): IF A$ = " " THEN J = 16:
GOTO 1080
1070 M$ = M$ + A$#
1080 NEXT J
1090 RETURN
1100 REM messages
1110 FOR S = 1 TO 8: PRINT CHR$(15); CHR$(27); "SSSSSSSS"; CHR$(
24); CHR$(14);: NEXT : RETURN
1120 PRINT "To move: Press "; CHR$(15); CHR$(27); "J"; CHR$(14); "
or "; CHR$(15); "K"; CHR$(24); CHR$(14): RETURN
1130 PRINT "To select: Press RETURN": RETURN
1140 PRINT "To re-start: Press SPACE BAR": RETURN
1150 PRINT "To Mark/Unmark files: Press "; CHR$(15); CHR$(27); "U";
CHR$(14); " or "; CHR$(15); "H"; CHR$(24); CHR$(14): PRINT "To
accept marked files: Press RETURN": RETURN
1160 VTAB 10: HTAB 25: PRINT "Prefix /RAM/ not acceptable.": RM = 0:
RETURN
1170 REM error
1180 E = PEEK (222): CALL - 3288: ON (E = 9) GOTO 1210: ON (E = 5)
```

Listing continued.

Listing continued.

```

GOTO 320
1190 IF E = 19 THEN 780
1200 HOME : VTAB 5: GOSUB 1110: VTAB 20: GOSUB 1110: VTAB 12: HTAB
30: PRINT "Unanticipated error #"; PEEK (222); CHR$ (7): END
1210 HOME : VTAB 5: GOSUB 1110: VTAB 20: GOSUB 1110: VTAB 12: HTAB
35: PRINT "RAM disk full"; CHR$ (7)
1220 PRINT CHR$ (4); "DELETE /RAM/"; LS: END
1230 IF PEEK (768) > 0 THEN HOME : VTAB 5: GOSUB 1110: VTAB 20:
GOSUB 1110: VTAB 12: HTAB 26: PRINT "Unanticipated ProDOS MLI error
#"; PEEK (768); CHR$ (7): END
1240 RETURN
1250 REM POKEs FOR FILEINFO SUBROUTINE AT ADDRESS: 787-826. 40 BYTES
1260 FOR N = 0 TO 39: READ P: POKE 787 + N, P: NEXT
1270 DATA
32,190,222,32,227,223,133,171,132,172,169,2,160,3,133,113,132,114,32,21
2,229,56,233,2,141,1,3,32,0,191,196,56,3,141,0,3,96,10,1,3
1280 RETURN

```

End of listing.

Listing 6. Sample start-up program.

```

10 PRINT CHR$ (4); "-RAM DRIVER PROGRAM"
20 PRINT CHR$ (4); "PREFIX MY.DISK/UTILITY"
30 PRINT CHR$ (4); "-TRANSFER.ALL"

```

Listing 7. List 80.

```

1 ? CHR$(4)"PR$1"
2 ? CHR$(9)"80N";
3 ? CHR$(9)"60P"
4 LIST 10-
5 ? CHR$(4)"PR$0"
6 END
RUN
1
2
3
4
5
6
END

```

with a text editor or word processor (DOS-based). Then load a BASIC program, turn on your printer, and type EXEC LIST80. List 80 activates the printer, then lists your BASIC program in memory in 80 columns (line 2), 60 lines per page (line 3). In addition, you can change these two lines to produce any other format you prefer. ■

Write to Vera Bagboudarian, 7949 Vanalden Street, Reseda, CA 91335.

Send your tip to inCider, Elm Street, Peterborough, NH 03458.

MacroWorks™ makes AppleWorks work the way it should have in the first place.

New Word Processing Power

MacroWorks streamlines AppleWorks word processing with a multitude of new features. For example, one quick keystroke now deletes the character or the word at the cursor.

Return to our ~~office~~ office:
HARVEY R. SMITH
6502 DISK DRIVE
TYPE ALMOST
ANYTHING
WITH JUST ONE
KEYSTROKE.

Use one keystroke to jump to the start or end of a text line. Another keystroke will erase an entire line. Change your mind? Apple-U will instantly "Undo" your last delete command!

AppleWorks Macros

MacroWorks will convert any series of keystrokes into a new one-keystroke solid-Apple command (original open-Apple commands stay intact). Use our built-in macros, or define your own. For example, make Apple-N type your name and address. Or let Apple-X save or print *all* of your Desktop files, nonstop.

For the Word Processor, Data Base and Spreadsheet

Be creative! Set up macros to execute *any* often-repeated function. You can even skip unwanted questions like "How many copies?".

Flexible and Compatible

Use MacroWorks on a floppy disk, hard disk, Unidisk 3.5™ or RAM disk. It is compatible with the Checkmate™ and Applied Engineering (RamWorks™ or Z-Ram™) Desktop Expanders.

MacroWorks is NOT a time-consuming "pre-boot" disk. You boot AppleWorks like you always do, but now you've got new features.



Beagle Bros
MICRO SOFTWARE

3990 Old Town Avenue, San Diego, California 92110
AVAILABLE AT MOST SOFTWARE STORES or by mail:
Visa, MasterCard or COD orders, phone toll free
1-800-227-3800 ext. 1607

Multi-Column Printouts!

MacroWorks' Galley program prints your AppleWorks Word Processing files in side-by-side columns (two or three-wide) for faster and easier newsletter layouts.

Analyze Your Files

MacroWorks' File Analyzer program prints a sorted list of every word it finds, and reports the number of occurrences of each word and the average word-length. Great for making an index or for analyzing your writing style.

• COUNT WORD	• 1 WORK
• 10 A	• 1 WRITING
• 1 ADDRESS	• 1 YOU
• 1 ADDRESSES	• 1 YOU'VE
• 6 ALMOST	• 8 YOUR
• 1 ALMOST	• TOTAL WORDS: 402
• 1 ALWAYS	• CHARACTERS: 2013
	• CHARS/WORD: 5.0

Alphabetize Your Catalogs

MacroWorks' Alpha-Cat program prints a sorted two-column list of all the file names on a disk. Perfect for disk I.D. labels!

\$34.95 Friendly and Unprotected

MacroWorks works with all versions of AppleWorks on any Apple IIc or 128K IIe. And you can make disk backups without hassle.

(AppleWorks is a trademark of Apple Computer, Inc.)

"Hints & Techniques"

featuring over two dozen of the best utilities from inCider, including:

- Easy Letterheads
- Pseudo Random Numbers
- Peek to Poke
- Text Tricks
- Applesoft Shortcuts
- Paddle Reading
- Creative Sound Effects
- Print-Using Subroutines
- Picture Combine, 1, 2 and 3
- Super Startup
- Easy List
- Double Vision
- Apple Numbers
- The Calendar Printer
- Superfriendly Menu
- Mini-Catalog
- Applesoft FILL Command
- Programming Above Hi-RES Page 1
- Computed Gotos
- Keypad
- Multipage Dump
- Ditto
- Turn The Page
- Memory Search
- Ampersand Number Converter

hotCider Volume II, featuring:

- Should I Trade?
- Low-Res to Hi-Res
- Modern Battleship
- Mailing List Manager
- Formatted Lister
- Softball Statistics
- Apple Turnover
- CP/M to DOS Textfile Converter
- Flashcards
- Balloons
- Rocket Man
- Type Maker

hotCider Volume I, featuring:

- Visidata
- Poster Printer
- Doing Windows
- Cider Zap
- Dino Math
- Rembrandt
- Bongo's Bash
- Stack Attack
- Wizfix
- Procat
- Hello Menu
- Sector Mapper

Act now while this Premiere Volume of hotCider is still available!

Each disk comes complete with full documentation booklet, and expert telephone support.

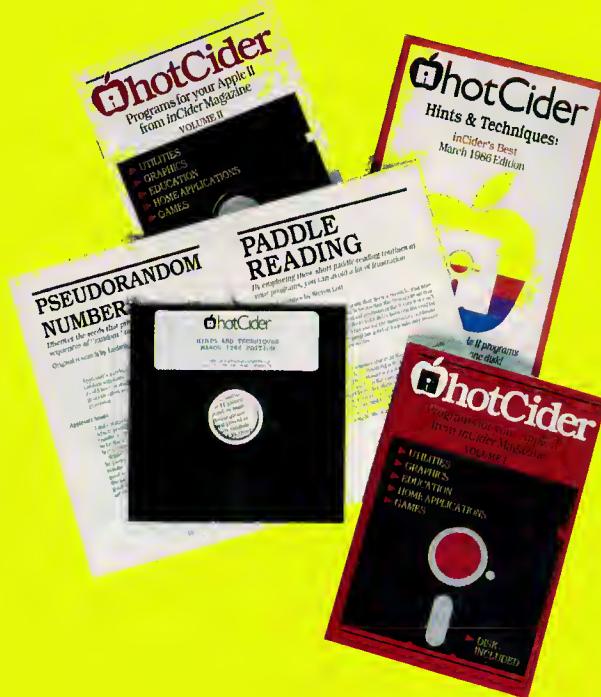
YES! I want to build my Apple II software library with the proven programs from inCider. Please send the hotCider disks I've checked below, complete with documentation booklets.

- Hints and Techniques, 26 Utilities, just \$21.47**
- hotCider Volume I, 12 Programs, just \$21.47**
- hotCider Volume II, 12 Programs, just \$21.47**
- Payment enclosed AE Visa MC

* Apple and the Apple logo are registered trademarks of Apple Computer, Inc.
** Prices include postage and handling. Foreign airmail please add \$1.50 per item.
US funds drawn on US banks only.

hotCider Software Special!

If Your hotCider Library Is Incomplete,



Fill In The Blanks!

BUILD YOUR APPLE II SOFTWARE LIBRARY the easy, reliable way, with the tested, proven programs selected from the pages of inCider. Complete coupon below and mail today or, for immediate service, **CALL TOLL FREE 1-800-258-5473** (In NH, dial 1-924-9471).

Card #	Exp. Date	
Signature		
(print) Name		
Address		
City	State	Zip

THE STATISTICS SERIES

FLEXIBLE • ACCURATE EASY-TO-USE

Human Systems Dynamics programs are used by leading universities and medical centers. Any program that doesn't suit your needs can be returned within 10 days for full refund. Designed for use with Apple II 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.

NEW

REGRESS II

\$150

Complete Multiple Regression Series
Stepwise, Simultaneous Solutions
Forward, Backward Solutions
Auto Power Polynomial Solutions
Data Smoothing, Transformations
Correlation and Covariance Matrices
Residuals Analysis, Partial Correlation
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Curve Fit: Hi-Res X-Y Plot

STATS PLUS

\$200

Complete General Statistics Package
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Produce Hi-Res Bargraphs, Plots
1-5 Way Crosstabulation
Descriptive Statistics for All Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 Way Anova
r, Rho, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

ANOVA II

\$150

Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated Measures, Split Plot Designs
1 to 5 Factors, 2 to 36 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinations, All Interactions Tested
High Resolution Mean Plots, Bargraphs

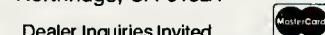


HUMAN SYSTEMS DYNAMICS

To Order—Call
Toll Free (800) 451-3030
In California (619) 993-8536
or write:

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324

Dealer Inquiries Invited



COMING ATTRACTI0NS

- *inCider* brings you 16 winning ideas from educators.
- What can an Apple II do to help school administrators climb mountains of data?
- Spreadsheets aren't just for accountants. Next month, *inCider* compares five popular spreadsheet programs and helps you decide which is right for you.
- Use your Apple II to control lights, appliances, heating, and your household gadgets.
- Reviews: Laser 128, MindPlay educational software, CommWorks, Fingertips, Pinpoint Spelling Checker vs. Spellbound, and more

inCider

inCider magazine is published monthly by CW Communications/Peterborough, Inc. Entire contents copyright 1986 CW Communications/Peterborough, Inc. No part of this publication may be reprinted, or reproduced by any means, without prior written permission from the publisher. All programs are published for personal use only. All rights reserved.

inCider is a member of the CW Communications Inc. group, the world's largest publisher of computer-related information. The group publishes over 50 computer publications in more than 20 major countries. Nine million people read one or more of the group's publications each month. Members of the CWCI group contribute to the *Computerworld News Service*, a daily on-line service offering the latest on domestic and international computer news. Members of the group include: ARGENTINA'S *Computerworld/Argentina*; ASIA'S *Asian Computerworld*; AUSTRALIA'S *Computerworld Australia*; Australian *PC World*, and *Macworld*; BRAZIL'S *DataNews* and *PC Mundo*; CHINA'S *China Computerworld* and *China Computerworld Monthly*; DENMARK'S *Computerworld/Denmark*, *PC World*, and *Run (Commerce)*; FINLAND'S *Mikro*, FRANCE'S *Le Monde Informatique*, *Golden (Apple)*, *OPC (IBM)*, *Theorenme*, and *Distributique*; GERMANY'S *Computerwoche*, *Infowelt*, *PC Welt*, *Computer Business*, and *Run*; HUNGARY'S *Computerworld Informatika*; ITALY'S *Computerworld Italia* and *PC Magazine*; JAPAN'S *Computerworld Japan*; MEXICO'S *Computerworld/Mexico*; THE NETHERLANDS' *Computerworld Nederland* and *PC World*; NORWAY'S *Computerworld Norge* and *PC Mikrodatal*; SPAIN'S *Computerworld Espana*, *PC World*, and *Commodore World*; SWEDEN'S *Computer-Sweden*, *Mikrodatorn*, and *Svenska PC World*; SWITZERLAND'S *Computerworld Schweiz*; THE UNITED KINGDOM'S *Computer News*, *PC Business World*, and *Computer Business*; VENEZUELA'S *Computerworld Venezuela*; THE U.S.'S *AmigaWorld*, *Computerworld*, *inCider*, *InfoWorld*, *MacWorld*, *Micro Marketworld*, *PC World*, *Run*, *80 Micro*, *Focus Publications*, and *Network World*.

Problems with Advertisers: Send a description of the problem and your current address to *inCider*, Route 101 and Elm Street, Peterborough, NH 03458, attn: Rita Rivard, Customer Service Manager. If urgent, call (800) 441-4403.

Problems with Subscriptions: Send a description of the problem and your current and/or most recent address to: *inCider*, Subscription Department, P.O. Box 911, Farmingdale, NY 11737. Or call (800) 645-9559, (800) 732-9119 in New York, between 9 a.m. and 5 p.m. E.S.T., Monday through Friday. If you have a problem with payment, please have your mailing label and your cancelled check or credit card statement in front of you.

Change of Address: Send an old label or a copy of your old address and new address to: *inCider*, P.O. Box 911, Farmingdale, NY 11737. Please give eight weeks' advance notice.

Microfilm: This publication is available in microform from University Microfilms International. United States address: 300 North Zeeb Road, Dept. P.R., Ann Arbor, MI 48106. Foreign address: 18 Bedford Row, Dept. P.R., London, WC1R4EJ, England.

Dealers: Contact Raino Wirein, Direct and Newsstand Sales Manager, *inCider*, Route 101 and Elm Street, Peterborough, NH 03458. Call (800) 343-0728.

Back Issues: Send \$3.50, plus \$1.00 postage for each copy to *inCider*, Back Issues Dept., Route 101 and Elm Street, Peterborough, NH 03458. For ten or more copies postage is a blanket \$7.50. To order by telephone using VISA, MasterCard or American Express call (800) 258-5473 from outside New Hampshire, or 924-9471, ext. 136, within New Hampshire.

Submissions: We're always looking for first-class manuscripts at *inCider*. We'll consider publication of any material for the Apple. Guidelines for budding authors are available—just address an envelope to yourself and include it with your request. Mail manuscripts, queries, or requests for writers' guides to: *inCider* Editorial Offices, Elm Street, Peterborough, NH 03458.

HARD DISK SYSTEMS

APPLE II+, APPLE IIe, APPLE III

"Quick Series"

20mb Starting \$795.00

ProDOS PROGRAM SELECTOR
INSTALLEO FREE!

Very Fast Read/Write, Auto Boots, Compatible
with Extended Memory and Speed Up Cards.

ProDOS and DOS 3.3	Now Only	Reg. Price
20mb Complete System	@ \$ 795.00	\$159.00
30mb Complete System	@ \$1195.00	\$1695.00
40mb Twin 20 Drives	@ \$1295.00	\$1795.00

NovoComp Apple II Hard Disk Utility Software
Variable size partitions, any or all systems

005 3.3, Pascal 1.2, ProDOS 1.1.1, CP/M @ \$150

90 Day Warranty Included - Add'l Year

Delivery via UPS Insured Ground

ProFIX - Allows DOS 3.3 on ProDOS Device

Meaty Back if performance not satisfactory

CMC Computer Systems **Phone: 714/835-2462**
1514 East Edinger #H **Santa Ana, CA 92705**

What you should know about the International Apple Core.

If you're like most Apple users, you don't realize the many benefits of an IAC membership. Or what it can do for you and your computer.

So what's an IAC?

International Apple Core™ is a non-profit organization of Apple users and user groups and has been serving Apple users since 1979. We are dedicated to providing education, information and support to users of Apple technology.

The International Apple Core is comprised of thousands of individual members and hundreds of user group members. Get together with your fellow members and share information on new applications, keep up on Apple events, receive specialized training, or learn the latest on new software and hardware products.

If you'd like to join a local users group we can help you find one. Want to start a users group in your area? IAC can help.

Support for your Apple and you.

Understand your computer better with such books as *Beneath Apple DOS*, *Beneath Apple PRO-DOS*, and *Universal File Conversion*, all discounted to members.

Interested in computer insurance to protect your hardware, software, and even your data? IAC can help you obtain coverage through "Data Security Insurance".

Discounts on hundreds of public domain software programs, as well as selected commercial software products.

Information, please.

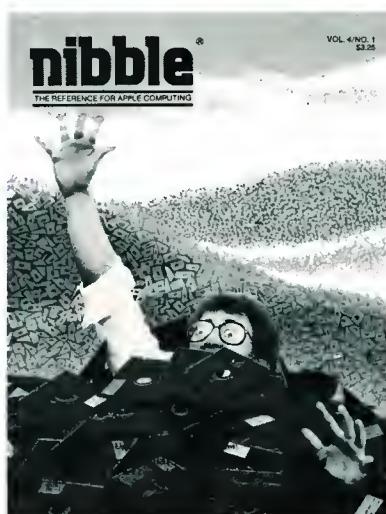
IAC provides many sources of information. Your \$30 yearly membership fee brings you IAC's newsletter "IAC Express", discounts on our many products, access to IAC's BBSs and a 12-issue subscription to *Nibble* magazine devoted to Apple systems and compatibles. *Nibble* magazine features more than \$50 dollars worth of ready to run Apple programs in each issue. The programs focus on home, business, education and entertainment. *Nibble* also features new products, reviews, tips and techniques for learning more about your Apple and having fun doing it!

As a member, you may subscribe to our Disk of the Month (DOM); \$60 will bring you a one year subscription. The DOM is a disk of public domain software which is mailed directly to your home each month with themes such as utilities, education, games, or a potpourri of different programs.

A membership That pays you.

As a member of the IAC you nearly get paid with what you will save. By joining you will save almost 20% on our AppleWorks Mailing Program which is used to create automated form letters from your AppleWorks database and word processing files.

Discounts on books, public domain software, and even *IACcalc* spreadsheet for under \$40.00.



Circle 157 on Reader Service Card.

Apple, Apple II, Apple III and SOS are registered trademarks of Apple Computer, Inc.

International Apple Core is Licensed by Apple Computer, Inc. to use certain of the latter's trademarks.

Get an education.

You'll receive many educational benefits from our software programs. You'll receive 20% off our 3PaK™ series of theme packaged programs which includes Educational, Financial, Games and the popular Logo. We have an Applesoft Tutorial and Education disk which is great for children.

Educational books are available to members at discounts of up to 20% off the cover price, with such titles as *Understanding the Apple //*, *Understanding the Apple //e*, *Bag of Tricks* and more.

Invite your friends and save.

IAC offers user groups a special package. For \$90 your group receives a full year IAC membership, IAC Express, all members of your group will have access to our BBSs, a subscription to *Nibble* for your group's library, and also a subscription to our DOM (disk of the month). Your group will be listed among the other hundreds of IAC user groups so that other local IAC members and Apple users will be able to locate you easily.

Individually or as a group you can't lose. So fill out the membership coupon below now, and don't forget to ask for our product catalog.

IACcalc and 3Pak are trademarks of International Apple Core. CP/M is a registered trademark of Digital Research.

Nibble is a registered trademark of microSPARC, Inc.

Membership Application

Individual Memberships

\$30 USA Individual

\$40 Canada

\$75 Elsewhere

Name _____

Address _____

City _____

ST/Zip _____ Country _____

Phone # _____

\$90 USA Group package

\$155 User Group package elsewhere

I'm already a *Nibble* subscriber,
Please extend my existing subscription.

All memberships include a 12-month subscription to *Nibble* magazine. Please allow 6-8 weeks for delivery of your first *Nibble*.



**INTERNATIONAL
APPLE CORE™**

International Apple Core
Membership Dept. 1-04
2278 Trade Zone Blvd.

San Jose, CA 95131 (OR phone) (408) 262-9419

Payment enclosed (US funds drawn on a US bank only)

VISA Mastercard

Exp. Date _____

Card # _____

Signature _____

EDITORS' CHOICE

MacroWorks: The Icing on AppleWorks' Cake

Not every IIe or IIc owner needs AppleWorks, but every AppleWorks user can benefit from **MacroWorks**.

Randy Brandt's enhancement package is a combined wish list and toolbox for Apple's spectacularly popular integrated program. It adds to AppleWorks what other utilities add to DOS 3.3 or ProDOS—extra speed and functions that soon become invaluable.

Macros, made famous by IBM PC programs like Lotus 1-2-3 and SuperKey, are keystrokes stored for playback when you type an abbreviation. MacroWorks, for example, lets you assign the sequence "Very truly yours," five carriage returns, and your name to solid apple-V (its solid-apple commands coexist with AppleWorks' own open-apple syntax).

Typing frequently used text is one thing, but typing AppleWorks commands is MacroWorks' specialty. Its macros add a keyboardful of changeable commands—not really new ones, in that they merely quickstep through AppleWorks menus or functions for you, but conveniences that left the *inCider* staff gleeful and grinning. Want to delete a character forward as well as backward, cut a word or line (and get it back if you change your mind), print a document, or flip between desktop files with a keystroke? Piece of cake.

While these and other default macros are primarily for word processing, making macros for other purposes (such as setting a range of spreadsheet column widths) is as easy as editing a word-processing file. And since it's installed on your AppleWorks start-up disk, MacroWorks takes almost no additional memory or boot time.

Technical Editor Paul Statt says, "MacroWorks takes a simple idea to extremes—if you find yourself typing the same keystrokes constantly, MacroWorks types them for you. Furthermore, it types so quickly you can accomplish tasks you would never attempt yourself, like putting all the words you delete into the clipboard so that you can get them back."

"The Beagle Bros always toss something special in the sack when you buy their products, and the largnipple in MacroWorks has three parts: a newsletter aid that prints AppleWorks word-processor files in two or three columns, a cataloguer that prints a sorted list of disk files, and a file analyzer.

"I'd pay 35 bucks just for the file analyzer—it makes a sorted list of every word in a word-processor file and calculates the number of words, average length, and the number of times you used each one. It's perfect for editors, and it's a guard against monotony or obtuse style."

"It won't work with Pinpoint, Jeeves, or early (pre-4.3) versions of

Applied Engineering or Checkmate RAM cards' desktop expanders, but otherwise can't say enough about MacroWorks—everything you read in the ads is true. If you use AppleWorks, buy it."

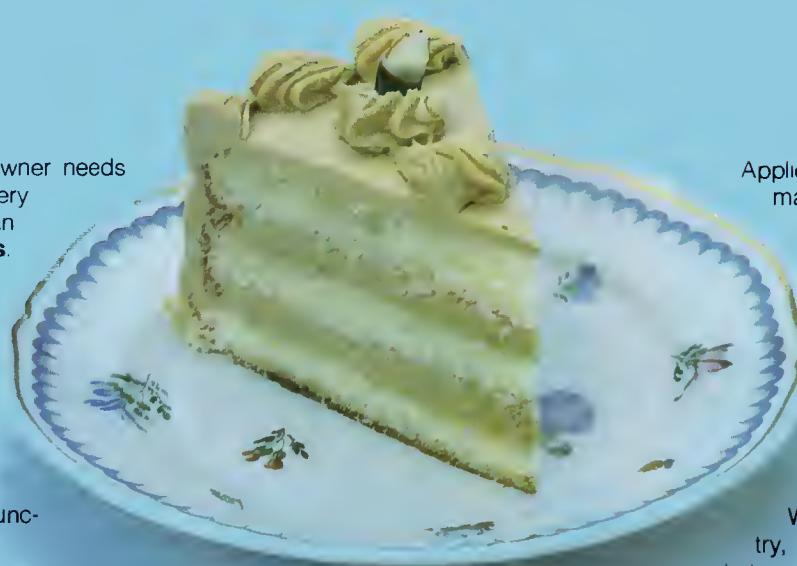
According to Review Editor Eric Grevstad, "Micro users become macro addicts for two reasons. Macro-

Works automates data entry, typing your return address or whatever, well enough, but its shorthand command entry is sensational. Even if you never write a macro of your own, its word-processing commands make AppleWorks a much better program—terrifically fast, with invaluable commands Apple forgot (well, didn't forget, but made too laborious for casual use).

"I spent my first day at *inCider* admiring AppleWorks' file handling, but snarling, 'Four keystrokes to delete a word?' Now, with MacroWorks' delete, undelete, desktop-switch, and cursor-movement commands, I hardly miss my 256K MS-DOS word processor. Forget Editors' Choice; this could be Product of the Year."

MacroWorks requires a IIe or IIc with 128K, ProDOS, and AppleWorks. It costs \$34.95 (not copy-protected) from Beagle Bros, 3990 Old Town Avenue, San Diego, CA 92110, (619) 296-6400.

*Every month, hardware and software manufacturers release dozens of new products into the Apple II market. Editors' Choice singles out one product each month that the *inCider* editors feel is a significant addition to the Apple II family of products. Products evaluated in Editors' Choice are among the most recent releases and may not be available yet for retail distribution.*



Introducing the Most Powerful Business Software Ever!

FOR YOUR IBM • APPLE • MAC • TRS-80 • KAYPRO • COMMODORE • MSDOS OR CP/M COMPUTER*

50% OFF!



The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

VERSARECEIVABLES™

\$99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

VERSAPAYABLES™

\$99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

VERSAPAYROLL™

\$99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

VERSAINVENTORY™

\$99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

VERSALEDGER II™

\$149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software**.

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

FOR APPLE & MACINTOSH OWNERS ONLY!

Apple and Macintosh owners only may now take 50% off our listed price of any module(s) from our VersaBusiness Series. All sales are final (our normal 30-day money back guarantee does not apply to sale items).

To Order:

Write or call Toll-free (800) 431-2818
(N.Y.S. residents call 914-425-1535)

- * add \$3 for shipping in UPS areas
- * add \$4 for C.O.D. or non-UPS areas

- * add \$5 to CANADA or MEXICO
- * add proper postage elsewhere

DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.

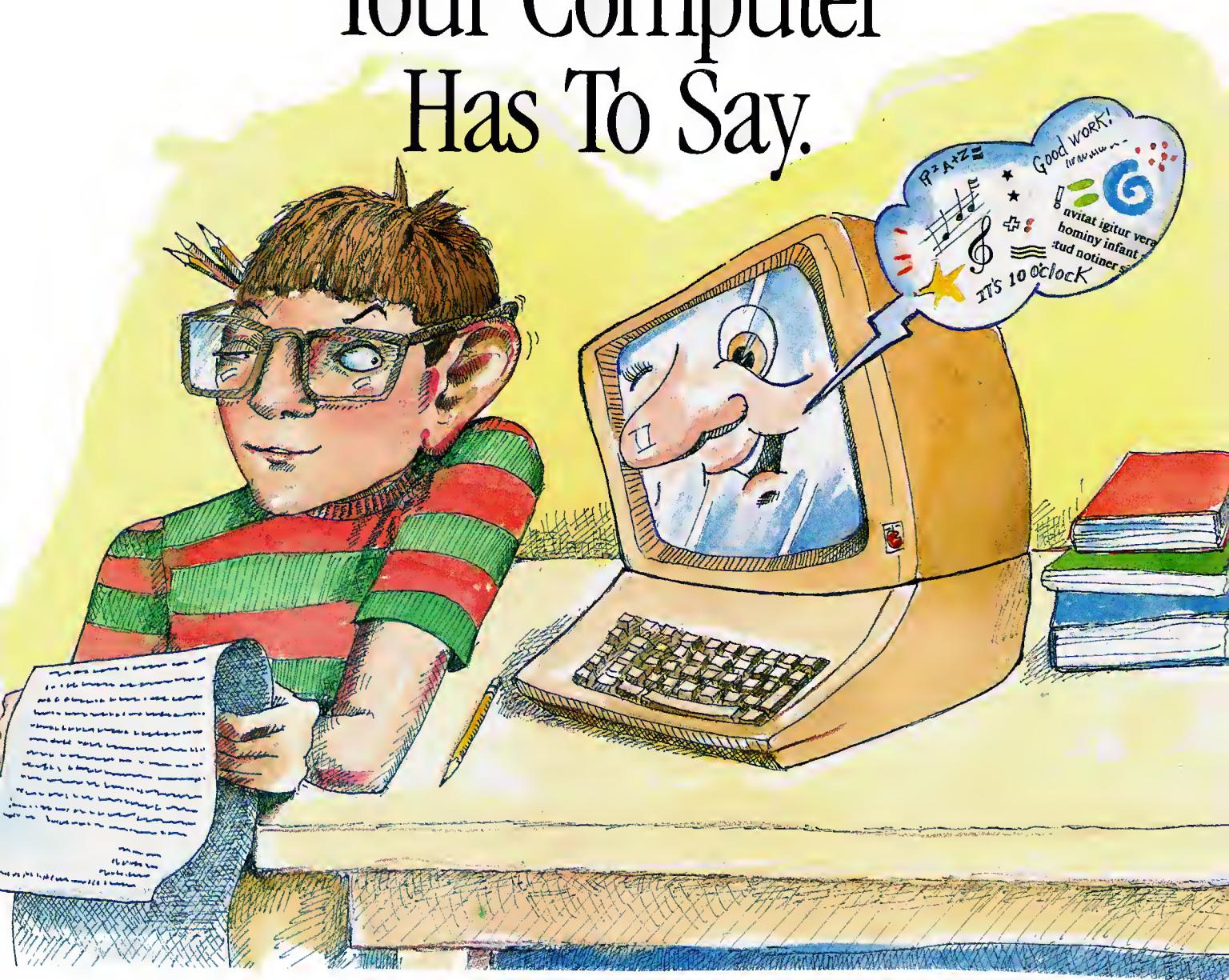


COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

Circle 66 on Reader Service Card.

It's Time You Listen To What Your Computer Has To Say.



The Echo + for the IIe and the Cricket for the IIC are the two leading speech and music synthesizers for the Apple® market. They offer an unlimited voice output capability in a robotic-type male voice and a dictionary

of over 700 commonly used words in a natural female voice. Over 50 software companies now offer programs which take advantage of the hidden voice in your Apple.



Street Electronics Corporation
1140 Mark Avenue
Carpinteria, California 93013
(805) 684-4593

Circle 73 on Reader Service Card.

Apple is a registered trademark of Apple Computer, Inc.